REPEATER JOURNAL

CVRA - SouthEastern Repeater Association, Inc.

May, 1985

1.50

Eastern Kentucky Joins CVRA-SERA

Also this issue:

- **New Updated 6-state Repeater Indexes**
- **Packet Radio - A Special Section**
- **Wayne's At It Again - A Billion Dollar Idea**

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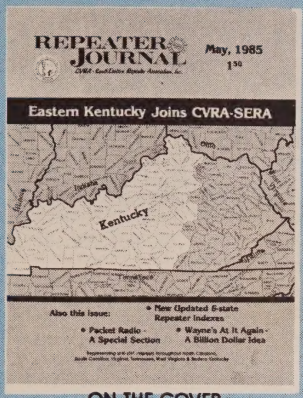
REPEATER JOURNAL
May, 1985
Eastern Kentucky Joins CVRA-SERA
Kentucky
Also this issue:
• New Updated 6-state Repeater Indexes
• Packet Radio - A Special Section
• Wayne's At It Again - A Billion Dollar Idea

ON THE COVER

Kentucky-The Eastern Third that is, takes the spotlight on this issue of the Repeater Journal's cover. The newest District in CVRA-SERA covers the Eastern-most part of the State which borders Tennessee to the South, Virginia to the East and West Virginia to the Northeast. The new Kentucky District, dubbed Eastern Kentucky became a full-fledged District the first of May.

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REPEATER JOURNAL

CVRA-SouthEastern Repeater Association, Inc.

MAY, JUNE, JULY
VOLUME 14, NO. 2
ORGANIZED IN 1971
"IN OUR 14th YEAR!"

Editorial Comment

And Then There Were Six. . . .

Eastern Kentucky became the official 6th District of CVRA—Southeastern Repeater Association, Inc. on May 1, 1985.

How in the world did we ever get way over there you might ask? Actually Eastern Kentucky borders Northern Tennessee and Southwestern West Virginia. This unique portion of the State is completely cut off from the rest of the state by high mountains, chopping off the eastern third.

For Amateur communications, this seemed like an iron curtain. Amateurs in Eastern Kentucky could hear Tennessee and West Virginia communications, but none from the rest of the State.

As it was described to this editor, the Kentucky Repeater Council has a fine organization, but Eastern Kentucky was kind of left out in the cold as far as coordination was concerned.

Some enterprising hams in Eastern Kentucky did the natural thing, they looked Eastward for help and they discovered there was help in the form of CVRASERA.

Last February, all repeater owners in Eastern Kentucky were polled as to whether they wished to become a "District" within the boundaries of CVRA-SERA. The answer was an overwhelming yes vote. Almost unanimous. . . An application for District Status was filed in late March and CVRA-SERA Directors approved District Status.

Eastern Kentucky now has the job of electing themselves a Director and a

Continued on Page 35

You Georgia Fellas Sure Got Us Confused!

Please pardon me if I sound slightly confused, but I thought a large number of Georgia repeater owners wanted to form a CVRA-SERA District and straighten out their coordination mess around that state.

I can remember talking to people as early as 1980 who expressed a keen desire to do something about it. Over the years we have received numerous complaints from Georgians about "no coordination", no one to turn to, "what a mess we got down here" and other things too numerous to mention.

In 1981, the CVRA-SERA Directors agreed to help those in Georgia who wanted to form a District. We began a separate Georgia section of the Journal. The entire State of Georgia repeaters were published each quarter, and generally undated by CVRA-SERA Journal staffers and our computer operator.

In 1982, Lindsay Cleveland, W4IZI moved to the Atlanta area. He found there was considerable interest in joining our organization. He spent time traveling to hamfests, speaking to clubs and telling the CVRA-SERA story.

There have been a few folks in Georgia who have worked hard to see District status come to the State, but they like the rest of use have been unsuccessful.

In 1985, a group again expressed a strong desire to poll the Georgia repeaters to see if CVRA-SERA District status was desired. In January, our treasurer, Ray Adams, N4BAQ and our Associate Membership Chairman, David Ward, KA4LVO worked and assembled a package that could be mailed to all known Georgia repeater owners. The package included a cover letter, Bylaws, Band Plans, Financial Statements, Journals, a copy of a petition "To create a Georgia District of CVRA-SERA", with instructions to sign the petition and return to Carter Cogle, K4ARO, President.

Some 35 of the packages were mailed out in February, the remaining ones were

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REPEATER JOURNAL

MAY, JUNE, JULY 1985

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About the Repeater Journal . . .

The CVRA-SERA REPEATER JOURNAL is published quarterly, during the months of February, May, August and November of each year and mailed free to members of CVRA-Southeastern Repeater Association, Inc., a non-profit coordinating organization made up of repeater owners and users. Permission is granted for use of material contained in the REPEATER JOURNAL, provided proper credit is given. The REPEATER JOURNAL Editor will swap newsletters with other Repeater Councils and News organizations on request. The REPEATER JOURNAL press run is 4,500 copies with circulation membership in excess of 3,900 and is entered as Third Class Mail at the Post Office in Greensboro, N.C. REPEATER JOURNAL copies may also be obtained at most area hamfests for $1.25 per copy. All news and Newsletter exchanges should be mailed to the Editor and Publisher, Wayne C. Williams, K4MOB, 600 Lakedale Road, Colfax, N.C. 27235.

About Associate Membership

Repeater users and Amateurs are invited to join CVRA-SERA as Associate Members. A membership fee of $5.00 per year will enable members to support the organization and receive the "Repeater Journal". Note: Associate Membership deadlines are on the 15th of the month preceding months of publication – Jan. 15, April 15, July 15 and October 15. Persons joining or renewing their membership must have their application into the Greensboro Post Office Box by these deadlines to receive the next upcoming Repeater Journal in February, May, August and November. Memberships received after any deadline will not receive the next to be published Journal, but instead will receive the forthcoming issue the next quarter. Memberships received at hamfests will receive a current "Repeater Journal" as long as supplies are available and the next regularly scheduled issue through the mail.

About Full Repeater Membership . . .

Officers and Directors are elected from members of CVRA-SERA Full Membership. Any repeater owner or club may join our organization as a Full Member by filling out an application and submitting it with $8.00 annual membership fee. Two representatives are named for each membership and each receive the "Repeater Journal." The Full Member repeater is appropriately recognized as a full member repeater in our repeater index in the Journal. Full Memberships all expire on December 31 each calendar year.

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About CVRA-SERA . . .

CVRA-Southeasterr. Repeater Association, Inc. is one of the largest Repeater Organizations in the United States. In our 14th year of operation, the Association shows positive proof that coordination efforts have paid off in the Districts it serves. Two of our Districts are 11th and 13th in the Nation in numbers of Amateur repeaters. We shall strive to continue to keep our area interference free

Eastern Kentucky Now CVRA-SERA District

— by Wayne C. Williams, K4MOB

By the time you read this, repeater owners in Eastern Kentucky will be working and choosing their new Director and Vice-Director.

Repeater groups in the State had applied to President Carter Cogle, K4ARO, for District status in late March. According to CVRA-SERA by-laws, the request is turned over to District Directors who wait 30 days , then vote. A Repeater Journal poll of most Directors at press time, indicated their vote would be yes.

The State of Kentucky is Northwest of Tennessee and bounds on the Western side of West Virginia, two other CVRA-SERA Districts. Eastern Kentucky, as the new District will be called, covers about one-third of the entire State of Kentucky.

The boundaries of the new District are drawn across a mountain chain that practically removes East Kentucky from the rest of the State, physically and most especially the blockage of radio signals from one side to the other.

Terry West, WB4F of Raccoon, Ky. was one of the main stays in getting Eastern Kentucky District status in CVRA-SERA. He had discussed it many times over the past couple of years with various CVRA-SERA officers and committeemen.

As more Kentucky repeaters began to join, an ddiscover our organization, West went to work. He got several others to work with him, and finally a poll was taken of all East Kentucky repeater owners. They were asked to vote "yes" or "no" as to whether they cared to apply for CVRA-SERA District status. West said that with almost 100% response, the vote was overwhelmingly yes.

At press time, 14 of 21 East Kentucky repeaters in our Repeater Index are Full Members of CVRA-SERA. West said he expects most of the rest to join very soon.

The shaded gray area represents the District boundaries of the Eastern Kentucky District of CVRA-SERA. The district covers slightly over a third of the State. Dense mountains separate East Kentucky from the remainder of the State. The District boundaries are chosen to run along this mountain range.

Eastern Kentucky District of CVRA-SERA is comprised of the following counties: Bath, Bell, Boyd, Breathkitt, Carter, Clark, Clay, Elliott, Estill, Fleming, Floyd, Greenup, Harlan, Jackson, Johnson, Knott, Knox, Laurel, Lawrence, Lee, Leslie, Letcher, Magoffin, Martin, Mason, Menifee, McCreary, Montgomery, Morgan, Nicholas, Ousley, Perry, Pike, Powell, Rockcastle, Robertson, Rowan, Whitley and Wolfe.

The counties listed are cut-off from the rest of the State by the mountains, rendering it impossible for the Kentucky repeater Council elsewhere in the State to coordinate repeaters in East Kentucky.

As CVRA-SERA bylaws require, the new Director and Vice-Director elected in Eastern Kentucky will be the official Frequency Coordinators for that area. They will also cooperate and communicate with District Directors in West Virginia, Virginia and Tennessee, and across the mountain with the Kentucky coordinators.

Carter Cogle, President of CVRA-SERA said: "It is with pleasure that we accept Eastern Kentucky as our sixth official District in CVRA-SERA." "We are very happy to have them a part of our organization, and we are ready to give any assistance they may require in getting set up, and forming their coordination group - welcome to our group, folks!"

Bluefield Hamfest

The East River Amateur Radio Club in Bluefield, West Virginia, will sponsor the Bluefield Hamfest again this year, according to Jim Perdue, KC8NG, chairman. The hamfest will be held on Sunday, August 25th, from 9 a.m. till 4 p.m., and has been sanctioned by the ARRL.

Nearing its 30th year, the Bluefield affair will be held at the Brushfork Armory-Civic Center for the sixth consecutive year.

Main prizes have been announced, and prize tickets will go on sale June 1st.

For information please send your SASE with a check for your tickets to: Bluefield Hamfest, Route 5, Box 457, Bluefield, WV 24701.

Coming In Aug

CVRA-SERA's newest District, Eastern Kentucky will be covered in the August Issue of the Repeater Journal. Repeater owners, clubs and users will show their readers their home through words and pictures. Look for it!

To Our Readers

We regret that no VEC examination schedules were printed in this issue of the Repeater Journal. Unfortunately no new schedules were received prior to publication deadlines that weren't already published in the February issue.

We hope this problem will be corrected next issue and we will get schedules from the VECs.

Amateur Explorer Post 73

Amateur Radio Explorer Post 73 of the Old Hickory Council, Boy Scouts of America, has promoted Amateur Radio to Scouts and the public alike at two recent events. Boyce Rogers (WB4WOM) and Jaime Burcham (KB4MZU) operated a demonstration station on both low bands and 2-meters at a scout merit badge weekend and at the Council's 75th anniversary of Boy Scouting Display at the city's Hanes Mall.

The Mall station exposed hundreds of scouts and the general public. Unfortunately the HF reception was, for the most part, noise produced by the various systems in the Mall. The 2-meter station did better.

Two troops joined forces to work on merit badges giving amateur radio another exposure to about 50 young people.

A Special Note:
Gerry and I wish to thank each of you who participated in our "Super Santec Weekend" last March. It was by far the most successful Sale we ever had. We promoted the sale in two "National" advertising mediums and the Repeater Journal. You Journal readers responded with 60% of the total sales. Thank you!!!!! We may do another one for Christmas!

— Wayne & Gerry Williams

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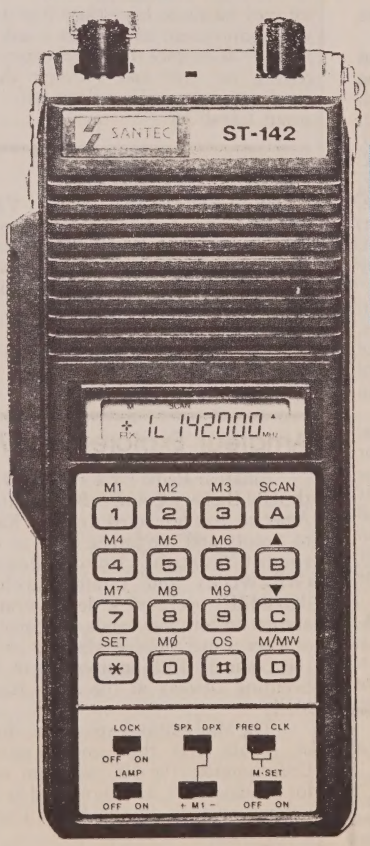

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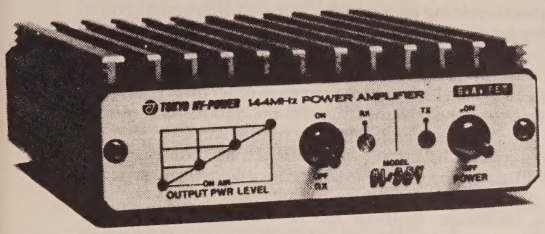

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A REPEATER JOURNAL SPECIAL SECTION

Packet Radio

A Brief Introduction To Packet Radio

From "LEARA" Newspaper by W8AJR

Radio teletype, or RTTY, has long been a popular mode of communication among Hams. With the advent of affordable personal computers, RTTY capability is now well within the reach of anyone who has even a simple two meter transceiver along with the possibility of computer program exchange, data exchange, and even computer networking.

In the course of a normal RTTY contact, only one station can transmit on a frequency at a time and, aside from roundtable discussions, each separate conversation requires a separate frequency. Furthermore, fading and interference can cause the loss of a substantial amount of information. Originally developed to meet the needs of hardwired Local Area Networks (LAN's) designed to link desktop computers, packet communications has much to offer in increasing utilization of crowded Ham frequencies (including repeater frequencies) and in overcoming the problems of interference and other losses of signals.

In the packet approach the information to be transmitted is divided into packets. Each packet contains identification of the addressee and the sender, a segment of the information being sent, an error detecting code, and synchronizing information. The packets are sent with listening intervals in between much in the manner of full-breaking CW. The receiving station checks the information received against the error code and either acknowledges the packet or requests retransmission. Although this slows the transmission rate, no more than a single packet is lost to interference unless the band fades completely, and the receiving station can have confidence that the information received is correct.

Station receiving packets which are not addressed to them can either ignore them or retransmit them. In this way, many packet "conversations" can occupy a single frequency without interference and packet conversations can be carried on between stations which cannot hear each other directly as long as both can hear the transmitting station. Should two stations happen to transmit a packet at exactly the same time on the same frequency, the packet system will automatically cause the colliding packets to be transmitted with one station giving way to the other.

The hardware required for this magic consists of a personal computer (anything from a VIC-20 to an IBM PC), a transceiver, and a packet interface board. Several boards are available and cost in the $150 range.

An excellent introduction to packet radio can be found in the July and August, 1983 issues of **HAM RADIO.** There have also been numerous articles in the last two years in both **QST** and **HAM RADIO.**

Anatomy of a Digipeater

— by Peter L. Lascell, W4WWQ

At first glance, the job of assembling and installing a Packet DIGIPEATER may seem like a project no one would volunteer to undertake unless he was threatened with bodily harm. Actually it is rather straight forward and only slightly more difficult than getting on Packet from the home QTH.

This article was the outgrowth of the planning and assembly of the WB4QOJ-1 digipeater being installed atop Poor Mountain, Roanoke, Va.

The items required for a digipeater fall into two groups: RF and Digital. Let's look at the RF requirements first.

RF EQUIPMENT

The basic requirement is a VHF FM transceiver in the 10-30 watt range operating on 145.010 MHz (EastNet freq.). A solid state, crystalled radio from the early days of amateur FM is ideal, although a proposed site may require further higher spec. equipment. If the digipeater is to be installed on a mountain top with rough environmental operating conditions and/or operating in close proximity to other commercial and amateur repeater equipment, then a look at the used commercial FM radios flooding the market may be in order. Luckily you don't need a base station with all the fancy requirements for duplex operation, but rather a mobile version will do nicely. Again a totally solid state radio is preferred because of the very low duty cycle required. Otherwise the total filament power requirements would be many times the power required to just power the transmitter when required. The commercial (GE, Motorola, Aerotron, etc.) products normally are designed to operate over wider temperature and voltage ranges than those products marketed for use solely by hams in their warm shacks. The only additional option or feature that is recommended is a carrier control timer. Its application is to unkey the transmitter after a predetermined time in case the PTT circuit from the controlling data board gets stuck. Normally the packet burst transmission is but 2-3 seconds long. The built-in CW ID may take much longer dependant on the CW speed.

In an effort to make the Digipeater fool proof in case of a failure, there is a need for a decoder of some appropriate type with an audio input from another receiver or control device. This may be a 220 or 440 MHz repeater if co-located. This keeps the FCC happy with the

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PACKET RADIO

— by Rick Brown, WD40LV

Packet Radio has been an interest of mine since my introduction to it by Don O'Neil, WA4SZK in Florence, SC, in January, 1984. Don had ordered a TAPR TNC board and was patiently waiting for it to arrive. I finally broke down and ordered the GLB version and received it in less than a week. Then came the biggest problem of getting into Packet.

Interfacing to your radio - - is the biggest problem or I should say the most common problem. The TAPR version of the TNCs has gone to a great deal of hardware for filtering the audio from receivers. The GLB TNC has virtually none but both are working fine in VHF FM Packet systems. There are other articles covering Packet and interfacing and I could go on for a long time, but I am only going to write on one subject at a time.

The Exar 2211 PLL decoder ICs are used by both TAPR & GLB and other manufactures of TNCs. The dynamic range of this decoder's input level is 30dB -- that is the same as saying 1000 to 1. It will operate over a wide variation in input levels to say the least. What it does not like is distortion; so the main thing in interfacing a TNC to your radio is no distortion, both in the transmitter and receiver. You may try to get the

Continued on Page 7

FARC Digipeater In Operation In SC

—by Don O'Neil, WA4SZK

Early last year, WD4OLV, K4WMT, WA4SZK and WK4KFD installed the first digipeater in the Carolinas for dedicated packet radio use.

The original repeater used a GE Porta-mobile transceiver and TAPR TNC at the club's alternate tower site, which is on a 295 foot tower east of the city.

After several months of frustrations with a water logged hardline, the Florence Amateur Radio Club (FARC) has finally got their packet digipeater up and running well at this time. The simplex frequency is 145.01 and the repeater call letters are W4ULH.

The present repeater uses a TAPR TNC, Clegg FM28 transceiver and a DB Products antenna. The antenna height is approximately 265 feet and uses half inch hardline donated by W4UDH.

A Mailbox/Gateway operated by WA48SZK is available for all users. The Mailbox/Gateway uses WORLI CP/M software and allows users to send or retrieve messages, upload and download files, read bulletins and other features. The Gateway allows users to connect into an HF link on 20 or 80 mtrs and look at other RBBS or call CQ or whatever suits their operating needs. The Mailbox will soon be tied into the NTS and will allow messages forwarding to many parts of the country.

The Mailbox/Gateway uses a Xerox 820 board, 2 Schugart 8" disk drives, 2 TAPR TNC's. The VHF port is 1200 baud, NBFM and the HF port 300 baud, 200 HZ shift.

It is hoped that by having the digipeater in the area it will create new interest in packet radio and give good coverage for several counties. Amateurs with a good beam antenna should be able to communicate for a distance of 75 miles from the antenna site. We look forward to other digipeaters going up in the Carolinas so that a good traffic link can be established via packet radio.

CONNECT V W4ULH the following stations: WA4SZK (Don), WD4EDT (Ernie), K4WMT (Lyn), WD4KFD (Charlie). TRY IT!!!

GLB Packeteers

Packeteers using GLB TNCs, in particular those using them as digipeaters, should contact GLB for an update of their software. PK-1 software prior to version 3.5 will not digipeat multiple frames with multiple digipeaters, if a PK-1 is specified as part of a multi-repeater link, only the first frame in any transmission will be repeated. To get the update, send your PROMs or a $10 deposit to GLB Electronics, 1952 Clinton St., Buffalo, NY 14206. (From March 73)

CONNECT V W4ULII. Lyn, K4WMT, Rick, WD40LV and Don, WA4SZK sit around one of the early Packet repeaters in the Carolinas. The W4ULH digipeater operates on 145.01 and is available for use by anyone. It is sponsored by the Florence (SC) ARC.

PACKET RADIO

Continued From Page 6

deviation of the two tones (1200 & 2000 Hz.) the same, but if you turn up the level of the TNC transmit audio, (with the 2200 Hz. tone on steady), to a point where you get no significant increase in deviation, this is the onset of limiting. Increase level beyond this point will cause distortion. Back off a small amount on this transmit level. The low tone will have a lower deviation level -- but so what. The level will be only about 6dB below the high tone and that is a long way from the 30dB as specified for the decoder. Don't forget, do not transmit distortion.

Now for the receiver. If you chose to use the speaker output of your radio, remember a few things. First, the volume control will change the level and you can turn the audio up into distortion relativity easy. Another, a speaker is an inductive load and this type of load will quite often produce distortion on the circuits to which it is connected. The 6dB per octave deemphesis of a receiver can work for you if someone is transmitting distortion, or there is noise on the signal (Noise and distortion are the same thing to the decoder ICs), by rolling the distortion and noise down.

If you choose to take the audio from the detector stage, or point before the volume control, there is no deemphesis, so you should add some sort of filtering on this audio. I prefer a single passive filter made from a coil and a few caps that will roll off the audio above about 2500 Hz, but start out flat over the 1200 to 2200 Hz. range.

Run open squelch (noise all the time). This only applies if you take the audio from the speaker leads. You may need the time it takes to operate the squelch circuit to prevent loss of data. But if it works fine with the normal noise squelch circuits, leave it alone. Just give it a try if you fail to receive properly.

Now to blow my own horn. I have interfaced three repeaters and two regular home stations and I have enjoyed the challenge of making them work and will be glad to advise others. I'm especially interested in seeing a digipeater between Lynchburg, VA and Florence, SC, say around Greensboro or Asheboro, to link the W4ULH digipeater northward.

More Packet Information!

Interested in packet radio fundamentals? See Ham Radio magazine, July and August issue of 1983. See '73 Magazine, October and September, 1983 and January of 1984. See also the ARRL "Gateway" packet newsletter.

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145.01. . . Have You Heard It

It may have seemed like a new fangled toy a few months back when Rick Brown, WD40LV, presented a program at the LARC meeting. Unfortunately the live demonstration left something to the imagination since he was the sole station in the area capable of a new mode of operation -- Packet Radio.

Packet is a special approach to sending ASCII data in blocks or groups with error checking. If an error is detected, the acknowledgement message is not sent and the sending station resends the information. The resultant is essentially error free computer type communication similar to that enjoyed by users of computer bulletin boards and timeshare services such as Source and Tymnet, etc. The big difference is that data is received in packets of a couple of lines at a time instead of continuous. The result is the same. The nice part is that many different conversations may take place on the same frequency at what appears to be the same time. Each packet burst of data lasts but a second or so.

To get on Packet Radio as we hams know it requires a dumb terminal such as a RTTY machine or a smart computer style CRT/Keyboard device connected to a "black box" Terminal Node Controller, or TNC, and inturn connected to the microphone, PTT and speaker connections of your favorite 2 meter FM radio or HF rig.

Since last fall, a number of stations in the Lynchburg area have joined with Rick to provide a home for what sounds like a bunch of tree frogs on 145.01 MHz. That is the common frequency used in the eastern U.S. and referred to as EASTNET among packeteers.

The original goal of EASTNET was to link Boston to Washington, DC. That challenge was met early August last year. Now the goal, official or not, seems to be to continue the link south toward Miami via Atlanta.

In the beginning the 2 meter band is being used, but as the volume and speed of the data increases, a switch to UHF will take place for the linking but the 2 meter frequencies will be used for local and "gateway" access into the longhaul link. Currently the data rate on 145.01 is standardized at 1200 baud. Speeds up to 56k baud are planned for UHF linking.

Activity on Packet Radio is hot around the Washington, DC area with many digipeaters, bulletin board, mailboxes and even "gateway" stations connecting to AMSAT-OSCAR-10 and HF frequencies such as 14.103 and 10.147 MHz. There are about 75-100 stations active in Maryland, Pennsylvania, D.C., and Virginia all within connecting range of metro D.C. That includes us here in central Virginia too.

Digipeaters are real neat repeaters -- they receive and transmit data, but on the same frequency. No duplexers required. And every station on Packet Radio becomes a repeater for helping others to leap frog to greater distances.

Locally, we have a digipeater atop Tobacco Row mountain under the call sign of K4LKQ-1. This site gives coverage to areas such as Charlottesville, Roanoke, Greensboro/High Point, and Richmond.

By "connecting" through K4LKQ-1, WG4T (Kents Store, VA), N2JR (Warrenton), WB6RQN (Germantown, MD), and WB4APR-6 (Elks Neck, MD), it is possible to have a QSO on the keyboard with stations in south Jersey. It's all on 2 meters -- just by typing "CONNECT KC2TN VIA K4LKQ-1, WG4T, N2JR, WB6RQN, WB4APR-6".

As activity is expanding west and south of Roanoke the need for another digipeater has developed. WB4QOJ-1 will move to Poor Mountain about April 5th. to extend the link toward the western parts of Virginia and North Carolina.

The near future goal for this area is to help complete the EASTNET link between Washington and Charlotte. The Charlottesville hams are working on a digipeater as well as hams down east trying to link westward from the easternshore. Hopefully the hams in the Carolinas can get the link complete through to Atlanta.

Those now active on Packet Radio in range of K4LKQ-1 Lynchburg, Virginia digipeater are:

CALL	NAME	TNC	QTH
WD40LV	Rick	GLB	Forest, VA
KA4MVO	Mike	TAPR	Lynchburg, VA
WA4SNY	Dave	GLB	Lynchburg, VA
WD4GYW	Walley	GLB	Madison Hights, VA
K4GVO	Jim	TAPR	Forest, VA
K4LKQ	Bob	TAPR	Lynchburg, VA
KB4OB	Bill	TAPR	Lynchburg, VA
W4WWQ	Pete	TAPR	Forest, VA
N4FHL	Ben	GLB	Roanoke, VA
W4DO	Harrison	GLB	Charlottesville, VA
W40TF	Ray	GLB	Charlottesville, VA
WG4T	Dave	GLB	Kents Store, VA
K4ARO	Carter		Petersburg, VA
K4JST	Gil		Charles City, VA
WA4BWF	Charlie		Elon, VA
KF4DQ	Fred		Waynesboro, VA

Packet Accessories Available

New packet radio hardware options are becoming available. AEA, GLB and others are introducing products. Also Terminal Node Controllers (TNC) are being introduced. Another option, a Xerox 850 board, with a TAPR FAD daughter board.

Watch Your Packet When Operation 220

Several complaints have been received of Packet operators utilizing frequencies on 220 mhz. below 222, which are set aside for SSB and repeater control link frequencies, presently under CVRA-SERA bandplans. It is suggested that Packet users might want to operate on 220 mhz. simplex frequencies above 223.50 until checks can be made as to what portion of spectrum at 221.00 mhz can be set aside for packet. Some areas in the Northern part of the country use 221.00 to 221.20 with 20 khz spacing for packet. If we find this portion less used, perhaps our Directors will assign some frequencies in that area.

Meanwhile, packet operators on 220 mhz. should take care which frequencies they operate. Many below 222 mhz. are being used for repeater control frequencies and linking frequencies. We are hoping most of these will be above 221.20.

On two meters, the frequencies of 145.01, 145.03, 145.05, 145.07 and 145.09 have been set aside for packet use.

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Anatomy of a Digipeater

Continued From Page 6

requirement for a separate method of control.

An antenna, usually omni-directional similar to a Ringo or other ground plane, and appropriate coaxial feedline finish the RF equipment requirements.

No duplexers or filters are required for a Digipeater except that which is required to prevent interference to and/or from other co-located radio equipment.

DIGITAL EQUIPMENT

This part of the Digipeater is easier to select assuming you are going to purchase something already in the market place rather than rolling your own.

The Digipeater only processes one data packet at a time. It receives it, makes a determination what to do with it, then retransmits it if appropriate. It does not have to handle multiple data messages in its simplest form. All of this data handling is accomplished within a "Black Box" called a Terminal Node Controller or TNC as it is referred to. Although there are a number of TNCs available such as the Tuscon, Vancover, AEA, Heathkit, etc., the GLB PK-1 TNC fills this role very well but does have some limitation in other applications as a user station's TNC.

If the GLB is selected, there is a couple options that should be used. The WATCHDOG TIMER is a safety circuit that keeps track of the microprocessor of the TNC and waits for a pulse every second or so. If the processor gets lost and the program goes awary, missing a pulse, the Watch Dog fires and resets the microprocessor to start over at the beginning of its program. The other option is special software from GLB which requires an external contact closure before any station can change any of the operating paramaters of the digipeater after he has connected to the digipeater. This prevents an unauthorized packet station from changing control codes.

PUTTING IT ALL TOGETHER

The assembly of the WB4QOJ-1 digipeater for Roanoke made the most use of the junk box in the spirit for which Amateur Radio is noted. The RF gear resembles a General Electric solid state crystalled mobile radio putting out 35 watts of power. The normal control head, speaker and fuse components were removed from the manufactures cases and remounted on a large flat aluminum panel 17 x 13 inches. The normal power and control cable for the mobile was cut to a much shorter length of about 4 feet and wired directly into the new control panel. Any of the plugs normally used on the back of the control head and associated end of the control cable was cut off and discarded. The heavy 12 volt power leads were connected to the larger fuse holder also mounted on the panel. This makes a good point for the leads from a 12 volt regulated power supply to connect. Usually a power supply with 10-15 amps is more than sufficient.

After the new control head has been assembled on the panel with the normal controls such as volume, squelch, microphone connector, transmit light, on/off switch; it is time to add the TNC, Watch Dog timer, Tone Decoder (in this case it was a two digit DTMF type). To facilitate testing during assembly and later troubleshooting if problems arise, a RS-232 connector was installed to connect to an ASCII terminal device to make it operate like a standard Packet radio station. A hard reset button and external audio input jacks added to connect to the control receiver or other device. The back side of the control panel is covered with a 13 x 17 x 3 inch deep aluminum chassis which is no more than a cover. No components are attached to the chassis; all to the flat panel.

SITE CONSIDERATIONS

If rack mounting is desired, the control panel could have been larger to fit the 19 inch mounting width, yet still used the chassis for the cover. The mobile radio may be mounted to a flat plate and intern into the 19" rack.

Assuming there is no other potential RF interference to be dealt with at the site, it should be as simple as erect the antenna and connect to the radio and applying 12 volts of power. If interference is possible, check for it in the beginning using the digipeater station in the voice mode.

With the expansion of the 2 meter FM repeater band down into the 145 MHz block the potential for real interference is there. It will be near impossible to co-locate a 145.01 digipeater at the same site as a sub-band repeater say operating on 145.23. The frequency spacing of less than 500 KHz is very difficult to deal with if not impossible. The best bet is to look for a 147 MHz. repeater site to co-locate at if a virgin radio site is not available.

WB4QOJ-1, Poor Mt., Roanoke, VA, should be operational by the time you read this. I hope it generates interest in the new mode of amateur radio and other groups pick up the challenge to put together a digipeater to expand EastNet.

New Packet Repeater Sked In North Carolina

Beachum Leonard, W4RXG of Winston-Salem (NC) plans a Packet repeater on Sauratown Mt., 18 miles North of Winston-Salem. He said he hopes to get the digipeater operational by July or August on 145.01.

This machine will join the Roanoke (Poor Mt.) K4LKQ-1 and the Florence (SC) W4ULH Packet repeaters.

The Packet controller has not been selected at this time, but Beachum said the transmitter and receiver will be taken from an old Heathkit rig. His plans for the machine are to join in the proposed Maine to Florida disipeater link.

Packet Radio During Field Day

The ARRL has announced that Field Day groups that complete one or more QSOs via packet radio during the Field Day period will qualify for 100 additional bonus points. The repeater provision (Rule 7C) is waived for packet radio QSOs.

A packet station does not count as an additional transmitter. Indicate packet radio QSOs on the summary sheet as a separate "band". Complete Field Day rules are in the May issue of QST.

VIC-20 Repeater Controller???

The 145.11 W4RXG repeater located on Sauratown Mt., just North of Winston-Salem (NC) is completely controlled by a Commadore VIC-20 computer. Beachum Leonard, owner of the machine said the VIC-20 setup was designed by Gary Tilton, N4JNE.

Call letter changes, timing functions, and COR is run on the VIC-20 which has been programmed in Basic language. Copies of the program are on disc, and if the need arises, and the computer loses it's program, it can be quickly reprogrammed via telephone line, or by radio control. W4RXG said he and N4JNE plan to add some bells and whistles to the otherwise normal operating machine.

One of their plans is to initiate a dip in the squelch tail of the machine, to allow packet information to be sent on the repeater squelch tail. They haven't tried it yet, but they hope this will allow normal voice communications on the repeater, and at the same time, packet information can be sent on the squelch tail between voice communications.

Warford, K4AZA Named to CVRA-SERA Position

F.L. Warford, K4AZA of High Point, N.C. was named by CVRA-SERA President Carter Cogle the organizations Technical Committee Chairman and FCC Liason Committee Chairman. In these new positions, which have been vacant for some time, F.L. will offer Technical help to repeater owners and be available for advice. He will also work in conjunction with the Journal Technical Editor in writing stories of Technical interest to repeater owners and users.

In his FCC Liason capacity, Warford will be responsible to see that all FCC news, dockets and other information before the FCC is acted upon if necessary by CVRA-SERA. He will be available to assist directors in statistics or information involving FCC rules or pending dockets.

F.L. said he has named Fred Blackman, KI4MN as his assistant in the FCC Liason spot. Fred has been licensed 3 years in Amateur Radio and has numerous years experience in the broadcast industry. He is presently anchorman for WGHP-TV, Channel 8 in High Point.

F.L. is no stranger to CVRA-SERA. He was one of the original group in 1971 who organized the old North Carolina FM Repeater Association.

Warford was a Navy veteran from 1951 to 1955, attended Electronics school while in the service. Later he started in life with a job with North State Telephone Company. He first got his amateur license in 1965, with the first call of K4VUG. F.L. joined Western Electric in 1957, defense activities division as a field engineer. He did a stint for Western at White Sands Missile base in New Mexico. He picked up the call of W5MJW, and placed a 34-94 repeater on the air in El Paso, linked to Sunspot, NM via 6-meters.

In 1965 F.L. transferred to Sunspot and worked for Cambridge University and NASA. He picked up the call WA5DOP.

F.L. returned to High Point in 1967 and placed the 34-94 machine in operation under the call of K4VUG and picked up the call of K4AZA as his main operator call. He helped Clint Davis, W4IVY and Don Harris, W4BUZ, develop the 34-94 repeater. This was the first machine in the area to have an autopatch using GE C-Code.

In 1971, Don, Bill Simms, K4RUQ and F.L. saw the benefits of frequency coordination due to interference between the 34-94 repeaters in Durham, Charlotte and High Point. This was when CVRA-SERA was first born.

Presently F.L. co-owns the 40-00 repeater in High Point, and the 19-79 Machine on Sauratown Mt.

F.L. said he owns signal generators, spectrum analyzers and other associated equipment. He wants to make himself available to repeater owners and groups who are having difficulties with interference, control and other electronic problems. He will be available by phone, (919) 869-3228, or by Mail (see address page 2). On difficult cases, there is a possibility of physically helping owners and groups where necessary.

Don't Leave Home Without It

— by Frank I. Stewart, Jr., KB4DAC

Recently I was driving my wife's front wheel drive Buick on a paved, but much patched, asphalt back road near Jasper, Georgia. It had been raining, so I slowed down to 40 MPH thinking that front wheel drive would be safe enough.

However, for no apparent reason I skidded off the road to the right, narrowly missing going down a 50 foot embankment. I then skidded across the road to the left and head-on into a roadside bank.

My wife's left wrist was broken and my chest hurt pretty badly, and we could not open either door. The car was leaning on the right side while body damage prevented my door from opening.

I lowered my window, extended the antenna on my amateur radio handy-talkie and stuck it out the window. By the time the first passersby came to our aid, I had already contacted an amateur operator name "DOC" (call K4MIH) in Cartersville and he phoned the State Patrol. This got help to us about 30 minutes earlier than the passersby could have.

So, please take my advice and do these four things:

1. Wear seat belts and shoulder harness, as they definitely prevented more serious injury to my wife and I.
2. Slow down to suit driving conditions.
3. Know at all times where you are (your specific location) so you can convey it to anyone you might need to contact (that's what mile markers are for).
4. And remember to carry that HAM radio! DON'T LEAVE HOME WITHOUT IT!

Our Mistakes Causes Quite A Stir!

Last issue, under FCC actions we mentioned a South Carolina repeater that had to change frequencies because of an upside down Georgia repeater. We did not mention any action CVRA-SERA was taking, although, we were looking at the situation quietly. Meanwhile some other people have gotten quite up in arms about the situation.

We stand on our statement about wondering why the FCC did what they did. We have found out that this repeater which moved was coordinated as a South Carolina border repeater, but it's actual location is in Georgia. This of course puts the machine out of the CVRA-SERA jurisdiction since Georgia is not a District. In this case, our FCC Liason Chairman has been compelled to file the complaint with no action on the part of CVRA-SERA.

We still wonder how the FCC feels that just because a repeater has been on the air for sometime, not on what is considered the Standard "East" coast bandplan, they would take precedence over a repeater that is on the coordinated band plan frequencies. Naturally when this upside down repeater came on the air, there may not have been a band plan, but historically all over the country, as band plans were established, repeaters have moved to frequencies in conjunction with local or national bandplans. Such is not the case in this situation. We will keep you advised on this situation. (Editor)

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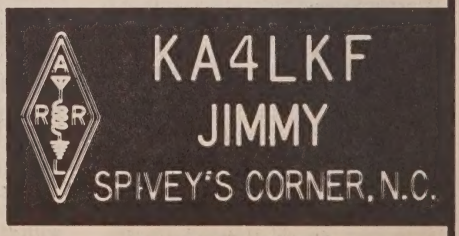

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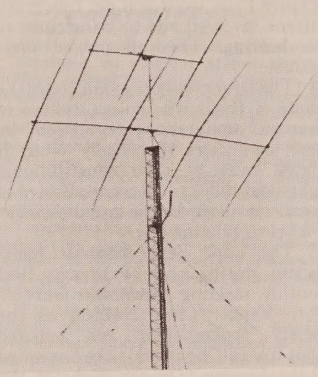

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Passage Could Have Been Disasterous

N.C. Hams Defeat Proposed Antenna Ordinance

—by Carl & Marie Presler, W4LPL, WA4YMM

Editor's Note: PRB-1 has not been favorably acted upon as of yet. But the following incident in Fayetteville, N.C. shows how badly Amateur Radio needs this Federal legislature to prevent local Governments from trying to make laws that bind and choke Amateur radio operations. They story is long, but we present in it's entirety the speech to the Cumberland County Board of Commissioners in the hope that if the problem occurs elsewhere, some ammunition may be gleaned from these words.

A Dark Cloud Over Horizon

Almost one year after 60 tornadoes in the Carolinas devastated thousands and demolished virtually everything in their wake, another dark cloud loomed over the horizon. This time an entirely different kind of cloud appeared, threatening nevertheless. It started when one of the Cumberland County commissioners, at the request of the Arron Lakes Homeowners Association, near Fayetteville, proposed a zoning ordinance change regarding the installation of television "dish" type antennas. The proposed change was highly restrictive and heavily ladened with provisos to the point that future installations would render them virtually useless in most cases.

The only known public announcement of the commissioners' hearing appeared in small print under "Legal Notices" in the classified pages of the **Fayetteville Times** on 12 February, 1985. It was guised under "promoting the health, safety and general welfare for the citizens of Cumberland County," who but for Don Hargis KI4AL with his eagle-like eye would have fished the notice out of the maze of fine print. Don alerted Carl Presler W4LPL on the "Red Carpet Repeater" 147.330. Carl who is retired, and a past president of Cape Fear Amateur Radio Society (CFARS) became the Paul Revere and town crier on the local 2-meter repeaters around the clock. Carl gave many reasons why this ordinance should not be passed, leaning heavily on the idea that it would serve as an abridgement of the First Amendment constitutional right of our concerned citizens, and could impact with great force on the future installations of all antennas in the county including Amateur, Citizens Band, Television, and other types.

Marie, WA4YMM (Carl's XYL), contacted an old family friend, Gay Milius W4AUG, ARRL Roanoke Division Director. The information needed was requested too late to arrive in time for the hearing. However, the ARRL has a fantastic packet designed to aid amateurs in their fight during such legal crisis. Marie also alerted the local T.V. Satellite sales agencies, the Citizens Band State Council, local media for coverage of a great story in the making. She urged everyone contacted to spread the word and get concerned citizens involved and to bring them to the hearing. This all proved most valuable.

The fervor was not mounting in the minds of those who do not believe in 'over and unnecessary regulation" by local lawmakers. Especially when it gnaws away at their constitutional rights and subjects everyone affected to live in servitude for the grandiosement of a select pristine few.

The Cape Fear Amateur Radio Society during their February 1985 monthly meeting nominated Burt A. (Van) Vander Clute N4ERM as the Society Spokesperson and solicited input from all members, to be presented at the hearing. On the night of the public hearing, it was uncertain as to how many would be in attendance, and the percentage for or against the proposal was anyone's guess.

All persons contacted were urged to be at the courthouse one hour prior to the scheduled hearing and all were asked to sign-up as "speakers" opposing the proposal. This enabled the limited time allocated each speaker (3 minutes) to be relinquished to the Society Spokesperson (another important foresight by WA4YMM).

Over 120 concerned citizens filled the hearing room seats to capacity with another 15 to 20 standing. Outside in the hall, an additional 30 to 40 stood in opposition to the proposal.

Things were beginning to look promising for those opposed. The first speaker, Mr. Bill Bowman, President of the Arron Lakes Homeowners Association, was the only one who spoke in favor of the restriction. Bowman said neighborhoods should be protected from "obstrusive eyesores" and added other "unnatural looking" objects. It appeared that no one was there to support him except Commissioner Virginia Thompson who called for the hearing. But when the next speaker, Marie Presler WA4YMM, asked those opposed to the ordinance to stand, it appeared that all of the 120 people occupying seats stood. This was apparently an early signal that spelled doom to the proposed restrictive legislation. The keynote speaker, N4ERM, spoke in opposition, to the amendment on behalf of CFARS members and other local hams, apparently also expressing the views of numerous other concerned citizens.

Here is the verbatim CFARS testimony delivered before the Cumberland County Board of Commissioners by N4ERM on 26 February, 1985.

Commissioners:

On behalf of the one hundred-plus members of the local Cape Fear Amateur Radio Society, I wish to express our Society's concern over the proposed zoning ordinance regarding the installation and use of satellite television antennas within residential areas of the county. While the stated intent of the proposed ordinance is (quote) "to permit satellite antennas where they can be installed without creating adverse economic, aesthetic and safety impact and to establish standards for their use that will promote the health, safety, and general welfare for the citizens of Cumberland County" (end quote), the effect may be quite the opposite. While it is unclear how such a zoning restriction could in any way benefit the public at large, the proposed ordinance, if enacted, carries with it the real potential to impact adversely on the health, safety, and well-being of the entire community--and extend into the international arena as well. The potential impact to the dedicated, public service-minded amateur radio operators could be most grievous. In this respect, I want to highlight four areas in which the general population and amateur radio operators, represented by the Cape Fear Amateur Radio Society, would be hurt by adoption of the ordinance: technological development, regulatory requirements, public/emergency service, and international repercussions.

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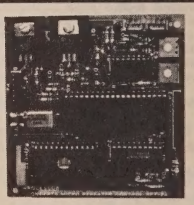

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Technological Development

Amateur radio operators, called "Hams," have historically been on the cutting edge of communications technological developments. It was experimentation lead by Hams which resulted in commercial radio and television. Ham pioneered development, at their own expense and on their own time, in continuous-wave transmission, narrow band frequency modulated transmission, suppressed carrier single sideband transmission, cellular communications, radio astronomy, and radar. The list of amateur radio "first ever" achievements in communications technology is extensive. Today Hams continue their developmental experiments with such things as packet radio communications, amplitude compandored single sideband and packet meteor burst communications.

Oddly enough, the subject of satellite communications probably would not have been before you tonight without the technological development of amateur radio operators. It was two major amateur radio operators, using their own equipment, who made the first two-way communication via satellite. In this case, before the development of guided missiles, the satellite was the earth's moon!

During both World Wars, self-trained radio amateurs responded to their country's call to man the nation's wartime communication asets and to develop highly classified communication techniques and procedures that directly contributed to the Allied successes.

Today, Hams play a vital role in the continuing development of modern communication technology. To date, the United States has launched 11 amateur radio satellites into earth orbit. The Soviet Union and a consortium* of West European nations have also put satellites in orbit for the express use of amateur radio operators worldwide. Japan will launch its first amateur satellite in January, 1986.

Technological development continues to be an important aspect of amateur radio operators worldwide. None of these developments would have been possible, however, without the antenna which Hams need to continue scientific technological development.

Regulatory Requirements

Amateur Radio Operators are licensed by the Federal Communications Commission only after an extensive series of examinations which cover proficiency in International Morse Code, knowledge of federal and inter-national regulations and procedures, and technical electronic communications theory and practice. Amateur radio is largely a self-policing hobby: Amateurs who have worked and studied so hard to get their federal operator licenses jealously guard the privileges which are associated with the license.

Part of the federal screening procedure in obtaining an amateur station license involved federal regulation of antennas. It would be inappropriate for local government to superimpose additional regulatory requirements on amateur radio antennas above those required by the federal government in their station licensing requirements. In this regard, US Senate Resolution 36 affirms that state and local regulations must not unreasonably restrict communications from amateur radio stations. An additional Senate Resolution, Number 35, affirms the rights of citizens to erect and maintain television receive-only (TVRO) satellite dishes.

The idea here is that amateur radio is already closely regulated by the federal government. Additional regulation of this important national resource at the local level, such as the proposed ordinance would impose, is unwarranted and inappropriate.

Let me degress here for just a moment to address the subject of antennas. Some of the antennas used by amateur radio operators are of the commonly called "dish" type. They are virtually identical in appearance and size to the latest TVRO parabolic "dish" antennas. In fact, there are dozens of kinds of antennas used by Amateur Radio Stations, of necessity, to provide local, continental, and international emergency communications during times of disasters and for other worldwide uses including technological experimentation.

Public/Emergency Service

The history of this century is filled with laudatory remarks from the heads of government at all levels who praised the dedication and outstanding service provided by amateur radio operators during times of crisis.

A typical example (only one of many) is when Iran held 50 American citizens hostage. When the Embassy hostages were seized, all official communications from Iran were cut-off instantly. However, there were American amateur radio operators in Iran who provided voice communication for days, before they were discovered, to another ham radio operator, W4RHE, in Orlando, Fla. W4RHE phone-patched the contact around the clock to the US State Department.

These were crucial days, and without proper antenna structures, the United States Government would not have known anything about what was taking place.

Approximately one year ago, a Fayetteville paper headline read: "60 Tornadoes Hit the Carolinas," or words to that effect. Amateur radio operators in Cumberland County were among the first to be dispatched from the Fayetteville/Cumberland Law Enforcement Center/Civil Preparedness Office as mobile and fixed portable two-way radio stations to operate in Red Springs, Maxton, Beaver Dam, Cedar Creek, and Roseboro areas. The tornadoes destroyed 98 percent of the official and commercial telephones and two-way radio stations in these areas. Amateurs from other counties in North Carolina and other states rallied to join our local amateurs in providing relief shifts for 24-hour operations. Local officials and the American Red Cross utilized the amateur communications which no one else, state or county, could provide. Links were provided to South Carolina, Fayetteville, and to the NC State EC, connected to Governor Hunt's office. For their efforts, these Amateur Radio Operators were officially commended by the Governor and by the Cumberland County Commissioners for their worthy and selfless contribution.

These same dedicated individuals and concerned taxpayers would be unable to adequately support any such future disasters with essential communications without proper antenna structures to include "dish" antennas if your proposed amendment is adopted.

I might also mention in this regard that it would not only be the amateur radio operators affected by this ordinance. It would also obstruct the contribution to civil and national preparedness of organizations such as the Civil Air Patrol (CAP), Military Affiliate Radio System (MARS) and the Amateur Radio Emergency Service (ARES). All of these organizations would be virtually unable to accomplish these public and national service missions if antenna structures were restricted. Citizens Band radio, which plays such an important role in REACT teams would be similarly affected.

International Repercussions

Above the national level, amateur radio activities are coordinated and regulated by the International Amateur Radio Union (IARU), a branch of International Telecommunications Union (ITU), and by the International Telecommunications Commission (ITC) of the United States. Amateur radio activities, as indicated earlier, may span nations. On any given day, an amateur radio operator in North Carolina might speak with radio amateurs in Brazil, Zimbabwe, Turkey, Russia, India, China, and Japan--all around the world. International amateur radio operations foster goodwill among the nations of the world. To impose undue restriction on the ability of Cumberland County hams to perform this important international good-will mission, in the interest of world understanding, is simply uncalled for.

The 100+ members of the Cape Fear Amateur Radio Society represent only about 1/8 of the Amateur population in the greater Fayetteville/Cumberland County area. On their behalf, we collectively admonish those who sponsor and/or support this proposed amendment on satellite dish antennas to ensure that they are thoroughly knowledgeable as to what the potential impact would be on the county's Amateur Radio/Civil Air Patrol/Military Affiliate Radio System/Radio Emergency Service/ and Citizens Band radio operators. Not only would the ordinance prescribe the important work of these dedicated individuals, but it would also serve as an abridgement of the First Amendment constitutional right of our concerned citizens.

It is evident to use that the proposed legislation is arbitrary, confusing, unenforceable, and in effect, usurps the rules and regulations of the Federal Communications Commission and Congress of the United States. Moreover, for the sake of some as yet undefined aesthetic consideration, it would have adverse impact on the health, safety, and public welfare of

Continued on Page 49

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New NC Director Named

Woodard, WA4BVW Resigns

Ken Woodard, WA4BVW, long time Director of the CVRA-SERA North Carolina District resigned in late March. Ken said the job had finally gotten such that he just didn't have time to devote to it like he wanted to.

Ken had served as North Carolina Director for most of the past eight years. He had seen a state grown drastically in numbers of repeaters, almost doubling during his tenure. Over the past two years he had shown great concern about the lack of 2-meter frequencies available in many parts of the State. His expertise in Mountain propagation on 2-meters was invaluable as a Director. For the past 3 years, he has had assistance in coordination from Danny Hampton, K4ITL. He and Danny split the State on a line at the Forsyth and Guilford County line, extending from that point North and South for their areas of coordination.

Ken will be missed, but we all will continue to reap the reward of his management over the past years.

Leonard Named NC Director

Beachum Leonard, W4RXG was named new North Carolina Director by CVRA-SERA President Carter Cogle, K4ARO, effective immediately after the resignation of Ken Woodard.

"We hate to see a good man like Ken leave us", Cogle said, "But I believe we have chosen about as good a replacement as could be found."

Beachum is very oriented in UHF/VHF. He has been on 2-meters since 1955, long before repeaters came about. He was a forerunner in the State of North Carolina when he and Wayne Williams, K4MOB placed the third 220 mhz. repeater in operation in the State in 1977.

Presently Beachum owns and operates a two meter and a 220 repeater set aside mainly for RTTY and computer activity. He owns another 220 and a 440 repeater for voice operation. He also plans to place a packet repeater on the air very soon.

Leonard has been a ham for 35 years. He is Site Manager (the equivilent to a Chief Engineer) for WUNL-TV of Winston-Salem, one of the 10 educational stations for The Center For Public Television, University of North Carolina.

Beachum said he is pleased to take on the job of Director of North Carolina.

"Aside from a couple of little problems which need to be ironed out, things are in pretty good shape around the state," he said.

Beachum said he plans to continue cooperation with Danny in split coordination for the State. He said he thinks he and Danny can work well together. He plans to include the Vice-Director Calvin Dempsey, WB4UQC who lives in the Eastern part of the State in their activities.

W4RXG said he is pretty familiar with CVRA-SERA Coordination guidelines and when he gets the records from Ken, he plans to bone up and see what things look like.

Bluefield Exams

— by Don Williams, WA4K

The Bluefield Volunteer Examining Committee administered Volunteer Examinations at Bluefield State College on May 4th. This was the third examination held by the West Virginia group.

The next examination will be held on Sunday, August 25th, 1985 during the Bluefield Hamfest. The examination fee will be $4.00, payable to "ERARC".

Hams wishing to take the exam should plan on arriving at the examination location by 9 a.m. The examining committee plans to register all examinees at that time and complete the exams by noon. Remember to bring a photocopy of your license and an FCC Form 610 (June 1984). The group WILL ACCEPT WALKINS. Examinations will be administered for all classes, Novice through Extra.

"This Is The CVRA News Net" Celebrates Its 450th Session

The CVRA News Net celebrates its 450th session on May 8th. The "strictly" news net, now in five States on 2-meter FM originally started in the late '70s as a local outlet to keep amateurs informed of happenings. Growth in the net was not necessarily encouraged and it retained a local status around the Greensboro, Winston-Salem and High Point (NC) area for years.

In 1984, the net was moved to the PCRN (Piedmont Coastal Repeater Network) and picked up 7 repeaters stretching from the coast of North Carolina to Sparta, which gave about 75% of the State coverage.

In 1985, Wayne Williams, K4MOB, moderator of the net, met with Danny Hampton, K4ITL, operator of PCRN. They made an agreement to allow any repeater desiring the net feed to take it without any complications.

"Danny and I want any repeater owner anywhere that can pick up the net to be able to run it over his repeater if he so desires," Wayne said, "So that's the way we have things set up now."

The change in policy has made the difference. Now repeaters in 5 states are carrying the Wednesday night net and several others are quietly making arrangements to pick up the net in the near future.

"The only obligation for the repeater owner carrying the net," said Wayne, "Is to let us know, so we can acknowledge that they are on, and most importantly, keep the net on every Wednesday so additional repeaters can leap-frog and get their signal."

As of May 1, the following repeaters are carrying the "CVRA News Net" on Wednesday nights at 8:30 local time: (All North Carolina repeaters listed are on 2-way linkage as members of the PCRN. Others are on one-way feeds.)

NORTH CAROLINA

Green Mt. (Sparta), K4ITL 144.83-145.43
Winston-Salem, WA4GIC 146.04-146.64
Asheboro, KJ4AV - 147.855-147.255
Raleigh, K4ITL - 146.28-146.88
Greenville, WA4DAN - 144.75-145.35
Trenton, K4ITL - 144.71-145.31
Wilmington, K4GMP - 146.22-146.82

VIRGINIA

Galax (Pt. Lookout), N4VL 144.53-145.13
Roanoke, WB4QOJ - 146.145-146.745
Lynchburg, (Bedford), WB4JBJ - 147.705-147.105

WEST VIRGINIA

Mullins, KC8IT - 147.63-147.03
Bluefield, W8MOP - 144.89-145.49

TENNESSEE

Greenville, N4TV - 144.65-145.25
Knoxville, W4BBB - 147.90-147.30
Knoxville, W4BBB - 222.90-224.50

EAST KENTUCKY

Pikesville, N4ETG - 146.19-146.79
Prestonsburg, K4ICN - 144.69-145.29

The CVRA News Net is available to any repeater owner who wishes to find a repeater carrying the signal and make arrangements to tie it into his own machine. Presently the South Carolina area is void with repeaters waiting for the net, but lack of signal down to that area is the hold up. Arrangements are presently being made with some repeaters in the Southwestern portion of North Carolina to remedy that situation.

Finally a note to repeaters running the net. Please make it a point of getting the net on the air every week. Our one-way hookup system may depend on your machine signal for a feed into another area. We appreciate your kind assistance.

Tornado Awareness Day

— by Jim Lehnberg, WA4TCR, ARES EC

The week of March 4 -8, 1985 was designated Tornado Awareness Week in North Carolina by the state National Weather Service. Wednesday, March 6, 1985 was named Tornado Awareness Day in which specific drills and tests were conducted by the National Weather Service offices in the state, local, city and county school systems, the Office of Emergency Management, and individual amateur radio groups. The Amateur Radio Emergency Service (ARES) of Forsyth County was involved on Wednesday with an amateur radio alert test followed by a net poll.

At approximately 9:17 AM on Wednesday, March 6, 1985 the NWS office at the Greensboro/Winston-Salem/High Point Regional Airport transmitted a tornado watch test message over their weather radio frequency of 162.400 MHz. This test message was initially received by ARES of Forsyth County Assistant Emergency Coordinator, Con Conrad, K4BE. Within 30 seconds of this tornado watch transmission, Con had initiated a low level alert with a 1050 Hz tone of 10 seconds duration to Amateur Radio operators in Forsyth County over the local 146.64 MHz WA4GIC repeater. The Amateur Radio Emergency Coordinator of Forsyth County, Jim Lehnberg, WA4TCR was notified at work of the test watch drill by a telephone call from the Office of Emergency Management at approximately the same time.

Within 3 minutes, 11 stations had checked into the Forsyth County weather watch net with K4BE assuming net control. Over the next 56 minutes an additional 28 stations were on frequency ready to report weather conditions or be assigned a particular duty. The NWS then transmitted a tornado warning test message at 10:16 AM. An additional 4 stations checked into the net after K4BE activated the high level alert with a 1050 Hz tone of 20 seconds duration over the repeater within 30 seconds of the warning message. The emergency coordinator was called on the telephone at 10:17 AM by the Office of Emergency Management of this test warning drill. The NWS drill, and subsequently the local weather net, was terminated at 10:47 AM.

A total of 43 stations checked into the Forsyth County weather net. Most of these individuals were within Forsyth County and few were even at work. Eleven stations heard the NWS watch/warning over a commercial radio (either AM, FM, or the NWS weather radio), 2 stations heard the announcements over the TV, 31 stations heard the drill acitivities over the 146.64 MHz repeater, and one station knew when the drill was to take place from a newspaper. The total exceeded 43 due to some individuals hearing the watch/warning through more than one source.

After the local weather net was activited, two stations, W4HKB and W4BOH, within Forsyth County served as liaison stations with the multi-county, wide area coverage Skywarn Net on the 146.79 MHz repeater on Sauratown Mountain serving the NWS office at the Regional Airport. Important and summary weather-related information was relayed into and out of the NWS office by these 2 liaison stations from Forsyth County and any other counties conducting local weather nets with their own liaison stations.

The Forsyth County Office of Emergency Management activated the city and county warning sirens at 10:03 AM to begin the school system portion of the test. This time was chosen to coincide with the school break periods.

A pleasant surprise of this drill, and perhaps because the recent Chief Meteorologist was a ham, is that 3 staff members of the Regional Airport NWS office wish to pursue licensure in the amateur radio service due to the excitement and value of ham radio. We wish them much success.

Bad Weather Forecasts???

— by Jerry Murphy, K8YUW (LEARA)

Too much has been said on the local repeaters recently about the accuracy of the forecasts issued by the National Weather Service, and much of what was said was rich with negative invective, but without substance. Perhaps this article will explain in part what I mean. It will also serve to invite your greater participation in what we hams call "SKYWARN".

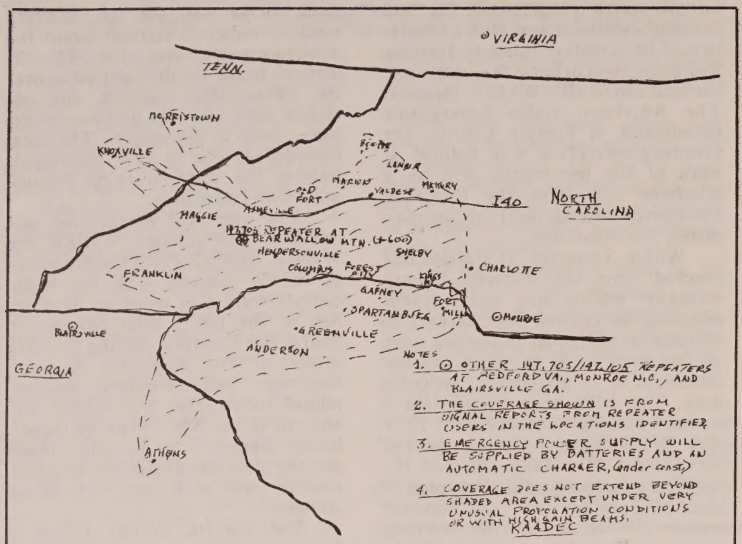
Dr. Neil Frank of the National Hurricane Center is fond of talking about how similar weather forecasting is to white-water rafting. On the one hand, a raft following the flow of a white-water river tosses and turns, and moves about rather unexpectedly. Some smooth areas can be found, but there are many hidden places where eddies can form, where submerged rocks and sandbars can alter the flow, and where small waterfalls can occur almost without warning. A boater on such a river is in for an exciting, but somewhat predictable journey. On the other hand, if that river suddenly was raised several thousand feet, and there were no longer banks to control the edges of the flow, it would be nearly impossible to predict the flow of water, let alone the eddies, whirlpools, and waterfalls. The jet stream that controls our weather is very much like that river without banks; it is a river of air and behaves much like a white water river would at those heights.

Records have been kept for decades of what weather has resulted from what observable and recordable things such as temperature, humidity, winds, clouds, etc. Over the years, these comparisons with history have resulted in better forecasts; such is the lot of climatology. Computer models have been derived over time that give what are known in the trade as Model Output Statistics (MOS). Meteorologists closely examine MOS and other inputs, gather information from their instruments and reporting stations and observers, and then provide us with our forecasts.

Only a few years ago, records show that forecasters at Cleveland were only slightly less accurate than the MOS at forecasting temperatures and probability of precipitation, but were within a few hundredths of a percent of being right. In the past year, this record reversed itself, and the MOS was slightly less accurate than the forecasters. In either case, errors in forecasting temperatures and probability of precipitation over a recent nine month period, including the 12, 24, and 36 hour forecasts, were off less than 5 degrees of temperature, and 4 percent probability of precipitation. I think we can live with that!

A good carpenter can pretty much guess with some accuracy how far into the wood a given nail will go with a given hammer and applied pressure. But even the best carpenter will not hit it on the head every time. How the good men and women of the National Weather Service can come so close in guessing what that airborn river of air will do is simply amazing; they hit it on the head more often than not!

Now for the part you can play in all of this: the computer models and training given our public servants in the Weather Service are based at least in part on the studies of Climatology. For several years, ham radio operators have played a part in all of this by observing and reporting weather phenomena at their locations, and these observations go into the record books for future study, not to mention the possibility of issuing warnings based on reports of certain phenomena such as hail, destructive winds, flooding, very heavy rains, wall, shelf and funnel clouds, etc.



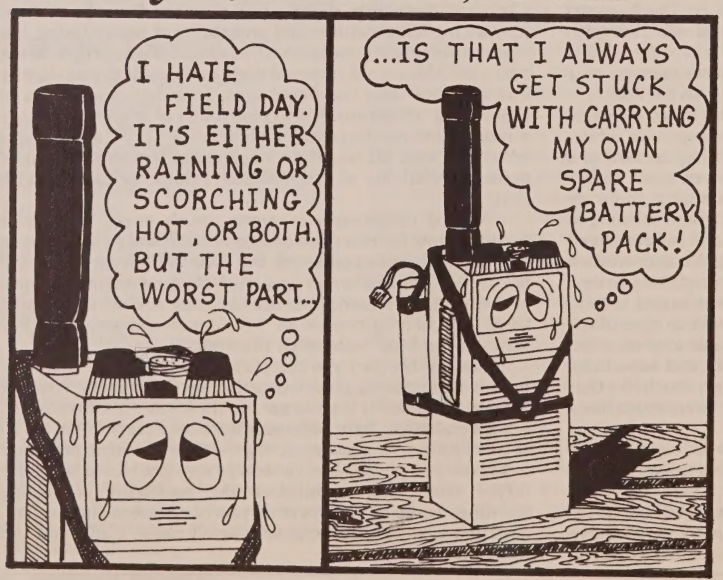
Marion Repeater Now on Bear Wallow Mt.

The Marion 701-105 repeater was recently moved to Bear Wallow Mt. in Western North Carolina. The machine has excellent coverage in the Western part of the State. Where mountain peaks do not interfere, coverage squeezes into Tennessee, Georgia. The machine is on the air 24-hours a day, with all users welcome. (Ray KA4DEC)

Black LCD?

Kenwood TR-2500 owners! Has your LCD turned a nice shade of black? If it has, Kenwood will mail you a free replacement display. Call the company at (213) 639-9000 and ask for Amateur Parts Supply. (From March 73 Magazine)

Stubby by Fred Hurteau, WD4SKH


I HATE FIELD DAY. IT'S EITHER RAINING OR SCORCHING HOT, OR BOTH. BUT THE WORST PART...
...IS THAT I ALWAYS GET STUCK WITH CARRYING MY OWN SPARE BATTERY PACK!

HOT-P Clarification

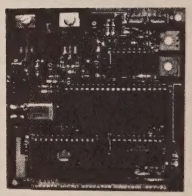
— by David Ward, KA4LVO

Due to a typesetter's error on my story in the February Repeater Journal concerning H.O.T.P. Associate Memberships, there is some confusion as to how to convert your regular associate membership to the H.O.T.P. type. The 'Hot Off The Press' copies receive priority attention in mailing and are mailed within 1 hour after we receive them from the printer. For the February issue, the H.O.T.P. journals were mailed as first-class mail at 4:45 p.m., Friday, Feb. 1; the rest were mailed third-class bulk rate about 11:00 a.m. on Monday, February 4.

H.O.T.P. Associate Memberships were designed for the person who moves a lot (and wants their Journal forwarded), for the person who has a post office who reluctantly delivers 3rd class bulk-rate mail, and for anyone else who wants to get the journal in a hurry. (I understand that some third-class journals mailed to Richmond, VA were received on March 2, and some sent to Knoxville, TN were received even later than that!) When we told people that we would have to charge $8.50 per year to pay the extra postage, they said "Fine" (and handed over $8.50).

There are two ways to have a 'Hot Off The Press' Associate Membership. First is to wait until your current membership expires and then renew at the H.O.T.P. rate. But if you'd rather not wait, write me to find out how much you should remit to convert your current associate membership to 'H.O.T.P.'. My address can be found on page 2.

MICROCOMPUTER REPEATER CONTROL



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HOURS: 9:00 AM - 5:00 PM
LOCATION: Roanoke Civic Center
GRAND PRIZE: Ten-Tec Argosy or TV *(Non-Amateur Prize)*
2nd Prize: Ten-Tec 2-Meter Handheld

ADDITIONAL HOURLY PRIZES

AMATEUR UPGRADE VE TESTS

WHERE: Exhibit Hall, Roanoke Civic Center
WHEN: Hamfest May 26, 1985 at 8:00 AM

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A Bit Of Nostalgia

— by Ted Wolfe, WD4KHL

This is a nostalgia piece.

We're all too familiar today with machinery that doesn't hold up under constant use. Before manufacturers latched onto "planned obsolecence" they built things to last. This, you might say, is a salute to a stalwart piece of machinery many of you have observed in operation.

I began working in commercial radio as an announcer back in 1947. Every station then had somewhere in the building an Associated Press, United Press International, or International News Service (the latter two later combined) teletype page printing machine.

Most likely it was an old Model 15 as pictured on page 101 of the ARRL publication "Specialized Communications Techniques for the Radio Amateur," First edition, 1975).

Those machines pounded away 23 and 1/2 hours a day (there were, after all, a few pauses), seven days a week, month after month, for years and years with only a monthly call by a contract maintenance man who lubricated it, changed pads, and tightened up any loose parts. Such a service call usually ran only an hour or two.

A lot of service losses were due not to machine trouble but to difficulties somewhere along the transmission line.

Now, admittedly, those old mechanical teletype machines were complicated monstrosities -- a mechanical nightmare. But they did work and work hard.

"Specialized Communications" noted that about 250-thousand Model 15's were produced before they stopped making them. A lot of hams have since acquired those machines as they were phased out of commercial service. A Model 15 probably afforded them entry into Ham RTTY ranks well before solid state devices, computers, dot matrix printers, and video display terminals arrived on the scene.

I'm not on RTTY yet as I do not own a Terminal Unit. But I've had the computer and a Kantronics CW, Baudot, ASCII program, and a TV set for copy for some time. Recently I was looking around for an old teletype machine to use for hard copy when I do get on RTTY.

As luck would have it, while driving and talking on two meters last Christmas Eve, an area ham who had lucked onto a 100-wpm ASCII machine which a firm gave him just to have him haul it out of their warehouse happened to say he didn't know what he'd do with his fully operational Model 15 in order to make room in his shack for his newest toy. He indicated he'd probably give it to any ham who would haul it away.

At the time I was in my pickup truck not far from his home. I said I'd be right there. So I got my Model 15 as a Christmas present from Frank, WA8VRS.

The table on which it rests, which came with it, weighs more than 50 pounds. But the machine is complete with keyboard, tape punch mechanism, a tape transmitter, and power (loop) supply built in. . It now occupies (word used advisedly) in a corner of my bedroom in which I have my ham equipment.

At the Fayetteville, WV, Hamfest on Sun., Feb. 24, KD8VT purchased a Kleinschmidt in very good condition, an AN/FGC-20 (TT-100B/FG) with manual, for only $8.00.

James had purchased the machine just to get the four rolls of paper which came with it. He already has his own RTTY setup at home. Since he didn't want the Kleinschmidt, into the back of my pickup truck it went.

At home I had a ball taking it apart to replace two screws that had worked loose (I'm not working, so the 12-hours spent were therapeutic). Even with the manual in front of me I wound up with three washers left over when I had it together again. Still, it worked!

Those screws have worked loose again, but I'm sure I can do the disassembly and assembly next time in a quarter of the time it took before.

I'm really not a technician so when I got the two machines -- the Teletype Corporation Model 15 and the Kleinschmidt -- working half duplex on opposite sides of the room, it was very ego satisfying.

I don't think I'd like a job trying to keep teletype machines in repair, but as just something to play with -- which didn't cost me a thing -- they are fascinating.

Early this year I watched a piece on "60 Minutes" by Andy Rooney on antiques. One video shot was of a special antique, an old mechanical teletype, sitting in a hallway at CBS. As Rooney noted, it had been there for over a month and nobody would even steal it. There surely must not have been any nostalgic hams working in that part of the CBS building, otherwise that particular antique would probably have promptly been properly "liberated."

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Another "First" For Pioneer ARC

— by Peter J.F. Shaw, K4LDR

The Metro Atlanta Telephone Pioneer Amateur Radio Club (MATPARC) successfully communicated to South America and Europe using walkie-talkies with a transmission power of two watts. This is a first in Georgia. How? - You ask.

The "Gateway-Repeater" concept was utilized. This is where a VHF repeater (range about 50 miles) is connected via separate radio link and telephone landline to an Amateur Radio Satellite ground station.

The walkie-talkie and mobile amateur operators communicate via the MATPARC repeater, atop the Southern Bell Center, which in-turn further relays the signals to MATPARC member Byron Lindsey's home satellite station in Decatur. Byron beams his very directional, high-gain, rotatable antennas towards a satellite named OSCAR 10 (the 10th orbiting satellite carrying amateur radio), where a transponder receives the signals at a frequency of 435 mh and retransmits them to earth on 145 mh. Any Amateur ground station in the "shadow" of the satellite can communicate using these frequencies.

MATPARC began testing this concept December 3rd and modifying their repeater equipment to accommodate the required landline and radio links. Byron also began rewiring his equipment to be compatible. Through a series of tests and modifying (improving) the modifications, MATPARC members and other Atlanta area amateurs were able to contact the Royal Air Force Amateur Radio Club Station (Callsign G8RAF) at the British Air Force Base outside London. Our second contact was with YV4WT; a fellow named Walt in Maracay, Venezulea. Reception was nominal in both directions. Twenty eight local amateurs using low power conversed with both distant stations.

Since December 3rd, MATPARC has activited the "Gateway-Repeater" several times and talked with a 14-year old high school student in Tampa, Florida, and hams in Sweden, New York, Alberta (Canada), California, Texas and New Jersey.

The January 14th noon MATPARC meeting featured as guest speaker Mr. Satellite himself - Byron Lindsey - W4BIW. Byron presented a slide show describing the construction details of OSCAR 10 and Satellite communications. Ken Evans - K3RFN, Network Switched Services, explained orbital details and technical parameter's of the Gateway operation. Over thirty attendees listened intently to those gentlemen who sprinkled the technical mumbo-jumbo with off-the-cuff humor.

OSCAR 10 (as were the previous nine) was built by hams in home workshops and basements. During final assembly and testing, old OSCAR made it to a legitimate laboratory. OSCAR piggy-backed aboard a European Space Agency Ariane Rocket launched from French Guiana, South America in June 1983. OSCAR is operating well though the optimum orbit was never achieved because the rocket "bumped" the satellite after deployment, thus changing the orbit and causing some antenna damage.

The thrill of our acheivement can never be put into written words. This will go into our memories along with MATPARC's success in providing communications for the Olympic Torch Relay through Georgia.

Your Input Helps!

The CVRA-SouthEastern Repeater Association is an all volunteer organization. Those of us who work in the many facets of the association do so because we believe in its purpose and method. Our only salary is satisfaction. Remarks from the membership provide us with our fuel to continue. Please keep them up.

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7.43 /4.93	LYNCHBURG	VA
4.51 /5.11	AUGUSTA	GA
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4.53 /5.13	NEWNAN	GA
	AHOSKIE	NC
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	GALAX/LKOUT MT	VA
4.55 /5.15	ATLANTA/GA TECH	GA
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	MARMET/BEE MT	WV
	MARTINSBURG	WV
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	OXFORD	NC
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	MCMINNVILLE	TN
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	GREENSBORO	NC
	CHARLESTON	SC
	FISHERVILLE	TN
	NASHVILLE	TN
4.67 /5.27	HENDSVL/PINCK MT	NC
	RALEIGH	NC
	HENDERSONVILLE	TN
	SHIELDS MT	TN
	MANASSAS	VA
4.69 /5.29	PRESTONSBURG	EK
	CHARLOTTE	NC
	CHATTANOOGA	TN
	PEGASUS	TN
	CHESAPEAKE	VA
4.71 /5.31	ROANOKE RAPIDS	NC
	ROCK HILL	SC
	ATHENS	TN
	JACKSON	TN
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4.73 /5.33	MT AIRY/TRNR MT	NC
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	CUMBERLAND CTY	TN
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	KNOXVILLE	TN
	BECKLEY	WV
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	MONROE	NC
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	HERMITAGE	TN
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	GALAX	VA
	WESTON	WV
4.81,/5.41	ATLANTA/BELL	GA
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	GREENEVILLE	TN
	MEMPHIS	TN
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4.83 /5.43	SPARTA/GREEN MT	NC
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	MARIETTA	GA
	FRANKLIN	NC
	RALEIGH	NC
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	MCMINVL/SHT MT	TN
	MEMPHIS	TN
	BLUEFIELD	VA
6.625/6.025	MARTIN	TN
6.655/6.055	BROWNSVILLE	TN
6.685/6.085	WAVERLY	TN
6.895/6.295	HARTWELL	GA
6.01 /6.61	GREENSBORO	NC
	NEW BERN	NC
	CHELSEA	SC
	GRNVLE/CSRS HD	SC
	MYRTLE BEACH	SC
	CHATTANOOGA	TN
	NASHVILLE	TN
	BROMLEY MT	VA
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	LYNCHBURG	VA
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6.025/6.625	LAURINBURG	NC
	NEW MARKET	VA
	HERNDON	WV
6.04 /6.64	AUGUSTA	GA
	HENDERSONVILLE	NC
	RALEIGH	NC
	WINSTON-SALEM	NC
	SUMTER	SC
	CROSSVILLE	TN
	MEMPHIS	TN
	NASHVILLE	TN
	FINCASTLE	VA
	MARION	VA
	RICHMOND	VA
	HUNTINGTON	WV
6.055/6.655	CONCORD/KANNAP.	NC
	ELIZABETH CITY	NC
	SIGNAL MT	TN
	ALEXANDRIA	VA
	ALTAVISTA	VA
6.07 /6.67	HAZARD	EKY
	GAINESVILLE	GA
	BURLINGTON	NC
	CHERRY MT	NC
	MT PLEASANT	SC
	BRISTOL	TN
	COOKEVILLE	TN
	LAFOLLETTE/WMT	TN
	NASHVILLE S.W.	TN
	BARREN SPRINGS	VA
	LEXINGTON	VA
	WILLIAMSBURG	VA
	RAVENSWOOD	WV
6.085/6.685	GRIFTON	NC
	STATESVILLE	NC
	NEWBERRY	SC
	VIENNA	VA
6.10 /6.70	DUNN	NC
	GREENVILLE	SC
	LANCASTER	SC
	FRAYSER	TN
	MANCHESTER	TN
	DANVILLE/WHT OAK	VA
	DUFFLD/POWLL MT	VA
	NORFOLK	VA
	STAUNTON	VA
	RAVENSWOOD	WV
6.115/6.715	SPRING LAKE	NC
	BLACKSBURG	VA
	STERLING	VA
	SHERRARD	WV
6.12 /6.72	ST ALBANS/COAL	WV
6.13 /6.73	GUTHRIE	EKY
	LOUISA	EKY
	RALEIGH	NC
	SALISBURY	NC
	WILMINGTON	NC
	N. AUGUSTA	SC
	SIMPSONVILLE	SC
	KNXVL/ENG MT	TN
	LEBANON	TN
	MEMPHIS	TN
	HAMPTON	VA
	KENEY MT/ALDSN	WV
6.145/6.745	DILLON/PEE DEE	SC
	DYERSBURG	TN
	ROANOKE/POOR MT	VA
6.16 /6.76	ASHVL/MT PISGAH	NC
	GREENSBORO	NC
	SWANSBORO	NC
	WILSON	NC
	CHARLESTON	SC
	FT JACKSON	SC
	BRISTOL/HLSTN MT	TN
	NASHVILLE	TN
	CHARLOTTESVILLE	VA
	FOREST	VA
	HUNTINGTON	WV
	MORGANTOWN	WV
	WHEELING	WV
6.175/6.775	CHARLOTTE/RTTY	NC
	ELIZABETHTOWN	NC
	PULASKI	TN
	WYTHEVILLE	VA
6.19 /6.79	PIKEVILLE	EKY
	NEWNAN	GA
	CLINTON	NC
	SAURATOWN MT	NC
	ANDERSON/SAS MT	SC
	CHARLESTON	SC
	CHATTANOOGA	TN
	JOHNSON CITY	TN
	NASHVILLE	TN
	CHESAPEAKE	VA
	FAIRFAX	VA
	OAK HILL	WV
6.025/6.805	GUTHRIE	EKY
6.205/6.805	FAYETTEVILLE	NC
	GASTONIA	NC
	COVINGTON	VA
7.405/6.805	MAGGIE VALLEY	NC
6.22 /6.82	ATLANTA	GA
	ROARING GAP	NC
	WILMINGTON	NC
	GRNVLE/PARIS MT	SC
	LAKE CITY	TN
	MEMPHIS	TN
	WINCHESTER	TN
	WINCHESTER	VA
	CHARLESTON	WV
	CLARKSBURG	WV
6.235/6.835	ASHEVILLE	NC
	NAGS HEAD/BODIE	NC
	WADESBORO	NC
	HAZEL MT	VA
7.435/6.835	THOMASVILLE	NC
6.25 /6.85	PIKEVILLE	EK
	GOLDSBORO	NC
	HICKORY/BRT. MT	NC
	REIDSVILLE	NC
	FLORENCE	SC
	LAURENS	SC
	GTLBG/COVE MTN	TN
	MEMPHIS	TN
	NASHVILLE	TN
	PORTSMOUTH	VA
	STAUNTON	VA
	BKLY/FLAT TOP MT	WV
	BUCKHANNON	WV
6.265/6.865	FAYETTEVILLE	TN
7.465/6.865	WAXHAW	NC
6.28 /6.88	PRESTONSBURG	EK
	SAVANNAH	GA
	RALEIGH	NC
	SHELBY	NC
	COLUMBIA	SC
	BRISTOL	TN
	MEMPHIS	TN
	NASHVILLE	TN
	OAK RIDGE	TN
	BRISTOL	VA
	RICHMOND	VA
	SALEM	VA
	CHARLESTON	WV
6.295/6.895	MADISON	NC
	WAXHAW	NC
6.30 /6.90	FAIRMONT	WV
6.31 /6.91	MOREHEAD	EK
	AHOSKIE	NC
	ASHVL/SPIVEY MT	NC
	FAYETTEVILLE	NC
	LEXINGTON	NC
	WHITE HALL	SC
	SAVANNAH	TN
	SHORT MTN	TN
	FARMVILLE	VA
	JONESVILLE	VA
	MT. LK/BALD KNB	VA
	TYSONS CORNER	VA
	FAIRMONT	WV
	MCMECHEN	WV
	RIPLEY	WV
6.325/6.925	ROCK HILL	SC
	CHARLOTTESVILLE	VA
	DANVILLE(DCC)	VA
6.34 /6.94	ASHLAND	EK
	BURGAW	NC
	CHARLOTTE	NC
	DURHAM	NC
	MANTEO	NC
	MT AIRY-RTTY	NC
	COLUMBIA	SC
	GREER	SC
	N. AUGUSTA	SC
	KNOXVILLE	TN
	MEMPHIS	TN
	NASHVILLE	TN
	HAMPTON	VA
	RICHMOND	VA
	ROANOKE	VA
	NEW MARTINSVLLE	WV
	RICHWOOD	WV
	WEIRTON	WV
6.355/6.955	ROCKINGHAM	NC
	PCTN/EAST RIVER	WV
6.37 /6.97	SAVANNAH	GA
	MT AIRY	NC
	SMITHFIELD	NC
	ANDERSON	SC
	FLORENCE	SC
	ALTAMONT	TN
	KNGSPT/BAYS MT	TN
	MEDINA	TN
	OAK RIDGE	TN
	MANASSAS	VA
	STAUNTON	VA
	VIRGINIA BEACH	VA
	LOGAN/WARD RK MT	WV
	PARKERSBURG	WV
6.385/6.985	AUGUSTA	GA
	ALBEMARLE	NC
	OLD FORT	NC
	ROANOKE/POOR MT	VA
6.40 /7.00	HIGH POINT	NC
	JACKSONVILLE	NC
	MARION	SC
	PICKENS	SC
	MEMPHIS	TN
	SUFFOLK	VA
	ST ALBANS	WV
7.60 /7.00	ELKHORN CITY	EK
	HIGH POINT	NC
	BLOUNTVILLE	TN
	CHATT/SIGNAL MT	TN
	CLARKSVILLE	TN
	TERRA ALTA	WV
7.615/7.015	LK NORMN/CLT	NC
	SUMTER	SC
	NASHVILLE	TN
	UNION CITY	TN
	FREDRICKSBURG	VA
6.43 /7.03	ROCK HILL	SC
	LEXINGTON	TN
	MILLINGTON/NB	TN
	RICHMOND	VA
7.63 /7.03	GREENSBORO	NC
	ROANOKE RAPIDS	NC
	MYRTLE BEACH, N	SC
	FAYETTEVILLE	TN
	MEMPHIS	TN
	MORRISTOWN	TN
	WAYNESBORO	VA
	MULLENS	WV
	ST MARYS/BENS R	WV
6.445/7.045	FAYETTEVILLE	NC
	HOPE MILLS	NC
	ROBBINSVILLE	NC
	YOUNGSVILLE	NC
	ARLINGTON	VA

Listings For

Virginia
West Virginia
North Carolina
South Carolina
Tennessee
Eastern Kentucky

REPEATERS BY FREQUENCY CONTINUED

7.645/7.045	STATSVL/ASBRY MT	NC
	LEBANON	TN
	RADFORD	VA
	STAUNTON/EL. KB	VA
	VIRGINIA BEACH	VA
6.06 /7.06	MADISON	WV
6.46 /7.06	CHARLOTTE	NC
	MEMPHIS	TN
	SOUTH BOSTON	VA
	PRINCETON	WV
7.66 /7.06	MACO	NC
	SUMTER	SC
	GRNVLE/GRYSTN	TN
	SHELBYVILLE	TN
	CHESTERFLD CO	VA
	POINT PLEASANT	WV
6.475/7.075	BURLINGTON	NC
7.675/7.075	LANIER MT/SNLV	GA
	BURLINGTON	NC
	GOOSE CREEK	SC
	KNOXVILLE	TN
	WAYNSBR/AFTON MT	VA
7.69 /7.09	PAINTSVILLE	EKY
	GREENVL/ESTN NC	NC
	ORANGEBURG	SC
	SPARTANBURG	SC
	SPARTA/BON AIR	TN
	GALAX/BRIRP MT	VA
7.705/7.105	BLAIRSVILLE	GA
	MARION/BEAR WLW	NC
	MONROE/UCARS	NC
	NASHVILLE	TN
	BEDFORD	VA
6.09 /7.11	LOGAN	WV
7.72 /7.12	WINCHESTER	EKY
	AUGUSTA	GA
	CEDARTOWN	GA
	GAST/SPCR MT	NC
	ROCKY MOUNT	NC
	MYRTLE BEACH	SC
	MEMPHIS	TN
	OAK RIDGE	TN
	CULPEPPER	VA
	BRIDGEPORT	WV
	DUNBAR	WV
7.735/7.135	DALTON	GA
	BREVARD/TRNS CTY	NC
	CHERAW	SC
	GALAX/FRIES	VA
	RICHMOND	VA
7.75 /7.15	ALBANY	GA
	CUMMING/SAWNEE	GA
	MORGANTON	NC
	RALEIGH	NC
	SIMPSONVILLE	SC
	MEMPHIS	TN
	NASHVILLE	TN
	OAK RIDGE	TN
	TAZEWELL	VA
	ST ALBANS/COAL	WV
7.765/7.165	HIGH POINT	NC
	GREENWOOD	SC
	NEWPORT NEWS	VA
	WARRENTON	VA
7.78 /7.18	BALDWIN	GA
	SANFORD	NC
	WILMINGTON	NC
	FT MILL/CAROWND	SC
	GOOSE CREEK	SC
	CLEVELAND	TN
	MEMPHIS	TN
	NASHVILLE	TN
	DUBLIN	VA
	PETERSBURG	VA
	LEON	WV
7.795/7.195	LAKE TOXAWAY	NC
	LYNCHBURG	VA
7.81 /7.21	DALTON	GA
	GREENSBORO	NC
	WHITEVILLE	NC
	LITTLE MT.	SC
	COOKEVILLE	TN
	JACKSON	TN
	MCLEAN	VA
	WISE/HIGH KNOB	VA
7.825/7.225	HILLSBOROUGH	NC
	MORRISTOWN	TN
	YORKTOWN	VA
7.84 /7.24	ASHLAND	EKY
	CARTHAGE	NC
	EDEN/MAYODAN	NC
	FOREST CITY	NC
	FRANKLIN	NC
	HILTON HEAD	SC
	LANCASTER	SC
	PROSPERITY	SC
	GALLATIN	TN
	MEMPHIS	TN
	PETERSBURG	VA
	WOODBRIDGE	VA
7.855/7.255	ASHEBORO	NC
	HENDSVL/STONE MT	NC
	ACCOMAC	VA
	MARTINSBURG	WV
7.885/7.255	DONELSON	TN
7.87 /7.27	DAMRON MTN	EKY
	PIKEVILLE	EKY
	BENSON	NC
	WAYNESVILLE	NC
	CHARLESTON	SC
	SENECA/LONG MT	SC
	GALLATIN	TN
	JOHNSON CITY	TN
	GUM SPRING	VA
	SCOTT DEPOT	WV
7.885/7.285	AIKEN	SC
	ROCKY SPUR	SC
	PIKEVILLE	TN
	MARTINSVILLE	VA
7.90 /7.30	JACKSONVILLE	NC
	LUMBERTON	NC
	TUCKASEGEE	NC
	CHARLESTON	SC
	KNOXVILLE	TN
	MEMPHIS	TN
	NASHVILLE	TN
	CLIFTON FORGE	VA
	FRANKLIN	VA
	WINCH/BLUEMONT	VA
	HARRISVILLE	WV
	HUNTINGTON	WV
7.915/7.315	UNION CROSS	NC
	HENDERSONVILLE	TN
	ALEXANDRIA	VA
7.92 /7.32	GRUNDY	VA
7.93 /7.33	TOCCOA	GA
	FAYVLLE/FT BRAGG	NC
	LENOIR/HIBRITN	NC
	COVINGTON	TN
	CROSSVILLE	TN
	NASHVILLE	TN
	LEXNGTN/COLE MT	VA
	WARSAW	VA
7.945/7.345	LYNCH/BLACK MT	EKY
	SHELBY	NC
	WASHINGTON	NC
	HENDERSONVILLE	TN
	GATE CITY	VA
	FRANKLIN	WV
7.95 /7.35	DANVILLE	VA
7.96 /7.36	DOUGLASVILLE	GA
	BOONE/RICH MTN	NC
	LUMBERTON	NC
	KNXVL/CROSS MT	TN
	MEMPHIS	TN
	NASHVILLE S.	TN
	PARIS	TN
	CHESTERFIELD	VA
7.975/7.375	BURNSVILLE	NC
	GREENVILLE	NC
	HILLSVILLE	NC
	GEORGETOWN	SC
	HILLSVILLE	VA
	LYNCHBURG	VA
	NEWPORT NEWS	VA
	GRAFTON	WV
	ST ALBANS	WV
7.99 /7.39	JENKINS	EKY
	CHARLOTTE	NC
	EDEN/STONEVILLE	NC
	SMITHFIELD	NC
	LEXINGTON	SC
	DAYTON/RHEA CTY	TN
	GALLATIN	TN
	MADISON	VA
	PETERSBURG	VA
	MONTGOMERY	WV
	PARKERSBURG	WV
6.19 /7.51	MEMPHIS	TN
7.135/7.735	ALAMO	TN
7.225/7.825	ATHENS	GA
7.285/7.885	BIRMINGHAM(ALA)	TN
7.30 /7.90	MONROE	NC
7.315/7.915	DALTON	GA
6.355/7.955	EAST RIVER MNT	WV
7.375/7.975	ATHENS	GA
	GREENVILLE	SC

220 MHZ

2.12 /3.72	STERLING PK	VA
2.30 /3.90	HERMITAGE	TN
2.32 /3.92	HIGH POINT	NC
2.34 /3.94	ASHLAND	EKY
	ASHVL/MT PISGAH	NC
	HILLSBOROUGH	NC
	CLARKSVILLE	TN
	MEMPHS/FRAYSER	TN
2.36 /3.96	ROCKY MOUNT	NC
2.38 /3.98	LINWOOD	NC
	GALLATIN	TN
2.40 /4.00	LOCUST	NC
	PETERSBURG	VA
2.42 /4.02	FAYETTEVILLE	NC
	HICKORY	NC
	NASHVILLE	TN
2.46 /4.06	EASLEY/SASFRS MT	SC
2.48 /4.08	NASHVILLE	TN
2.50 /4.10	FAIRFAX	VA
2.52 /4.12	LEXINGTON	SC
2.54 /4.14	PICKENS/CSRS HD	SC
	FRANKLIN	TN
	HUNTINGTON	WV
2.56 /4.16	LENOIR/HIBRITN	NC
2.62 /4.22	NASHVILLE	TN
2.70 /4.30	STATESVILLE	NC
2.74 /4.34	GALAX/PT LKOUT	VA
2.80 /4.40	CHARLT/MINT HL	NC
2.86 /4.46	KNOXVILLE	TN
2.90 /4.50	KNOXVILLE	TN
2.94 /4.54	MT MITCHELL	NC
3.00 /4.60	ASHEVILLE	NC
3.04 /4.64	RALEIGH	NC
	WINSTON-SALEM	NC
3.08 /4.68	LK NORMN/CLT	NC
3.10 /4.70	WSTFLD/SAUTN MT	NC
3.12 /4.72	TYSONS CORNER	VA
3.14 /4.74	KINGSTON/LICK KB	WV
3.16 /4.76	SALISBURY	NC
	DAN/WHT OAK	VA
3.18 /4.78	CHATTANOOGA	TN
3.20 /4.80	MORGANTON	NC
3.22 /4.82	GIBSONVILLE	NC
	KNOXVILLE	TN
	ALEXANDRIA	VA
3.28 /4.88	DALTON	GA
	WSTFLD/SAUTN MT	NC
3.30 /4.90	COLUMBIA	SC
	CHATT/SIGNAL MT	TN
3.32 /4.92	CHAPEL HILL	NC
3.34 /4.94	ROSSVILLE	GA
	GREENEVILLE	TN
	ROANOKE/POOR MTN	VA
3.36 /4.96	CHERRYVILLE	NC
	GOLDSBORO	NC
3.38 /4.98	FALLS CHURCH	VA

440 MHZ

9.25 /1.25	LEXINGTON	SC
	NORFOLK	VA
	ALEXANDRIA	VA
	SHELBY	NC
	CHATT/SIGNAL MT	TN
7.00 /2.00	PICKENS/CSRS HD	SC
	WINCHESTER	VA
7.05 /2.05	MEDINA	TN
7.10 /2.10	MILAN	TN
7.25 /2.25	COVINGTON	VA
7.50 /2.50	KNOXVILLE	TN
	ROANOKE/POOR MT	VA
7.70 /2.70	ROANOKE	VA
7.75 /2.75	ROANOKE	VA
7.80 /2.80	FRANKLIN	TN
	MEMPHIS	TN
7.90 /2.90	HIGH POINT	NC
8.00 /3.00	CHATSWORTH	GA
/	COLUMBIA	SC
/	MEMPHIS	TN
8.10 /3.10	LYNCH/BLACK MT	EKY
8.30 /3.30	GATLBG/COVE MT	TN
8.40 /3.40	MEMPHIS	TN
8.50 /3.50	SAURATOWN MT	NC
	PARIS/GROVE HL	TN
	TYSONS CORNER	VA
8.55 /3.55	WILKESBORO	NC
8.65 /3.65	MT MITCHELL	NC
	HAMPTON	VA
8.70 /3.70	LOCUST	NC
8.75 /3.75	ALAMO	TN
	FINCASTLE	VA
8.30 /3.80	MANASSAS	VA
8.80 /3.80	NORTHWEST/SE VA	VA
8.875/3.875	CHAPEL HILL	NC
	CAESARS HEAD	SC
8.90 /3.90	GRIFFIN	GA
	SALUDA	VA
8.95 /3.95	WILLIAMSBURG	VA
9.00 /4.00	CHARLT/MINT HL	NC
	HICKORY	NC
	RICHMOND	VA
9.05 /4.05	WAYNSBR/AFTON MT	VA
9.10 /4.10	DURHAM	NC
	COLUMBIA	SC
	CHATTANOOGA	TN
9.15 /4.15	ATLANTA/BELL	GA
	N. AUGUSTA	SC
	LEXNGTN/COLE MT	VA
	SPRINGFIELD	VA
9.20 /4.20	AHOSKIE	NC
	MORRISTOWN	TN
9.25 /4.25	CHARLOTTESVILLE	VA
9.30 /4.30	FISHERVILLE	TN
	HOOVER(ALA)	TN
	KNOXVILLE	TN
	WAYNESBORO	VA
9.35 /4.35	GALLATIN	TN
	APPLE ORCH MT	VA
9.40 /4.40	FAYETTEVILLE	NC
	OAK RIDGE	TN
9.45 /4.45	GALLATIN	TN
	FALLS CHURCH	VA
9.50 /4.50	MEMPHIS	TN
	LYNCHBURG	VA
9.55 /4.55	NASHVILLE	TN
	ALBERTA	VA
9.60 /4.60	CHARLOTTE	NC
	KNOXVILLE	TN
	ALEXANDRIA	VA
9.65 /4.65	WILLIAMSTON	NC
	GREENEVILLE	TN
	RICHMOND	VA
9.675/4.675	NASHVILLE	TN
9.70 /4.70	ROCKY MOUNT	NC
	WILMINGTON	NC
	MT PLEASANT	SC
	KNOXVILLE	TN
	MORGANTOWN	WV
9.735/4.735	DALTON	GA
9.75 /4.75	ROCK HILL	SC
	TYSONS CORNER	VA
9.775/4.775	NASHVILLE	TN
9.80 /4.80	GREENVILLE	NC
	MEMPHIS	TN
	LICK KNOB	WV
	MORGANTOWN	WV
9.825/4.825	STAUNTON	VA
9.85 /4.85	CHARLOTTE	NC
	PETERSBURG	VA
9.875/4.875	NASHVILLE	TN
8.90 /4.90	CHESAPEAKE	VA
9.90 /4.90	ASHVL/MT PISGAH	NC
	FAYETTEVILLE	NC
	GREENSBORO	NC
	WILSON	NC
9.95 /4.95	SUMTER	SC
	VIRGINIA BEACH	VA
9.975/4.975	NASHVILLE	TN
3.80 /8.80	SUMMERVILLE	SC
4.225/9.225	MANASSAS	VA
4.40 /9.40	MEMPHIS	TN
4.825/9.825	ATLANTA	GA
4.90 /9.90	WOODBRIDGE	VA
4.925/9.925	WINCH/BLUEMONT	VA
2.01 /ACON	FISHERVILLE	TN

10 METERS

9.52 /9.62	WILKESBORO	NC
	MEMPHIS/FRAYSER	TN
9.54 /9.64	CHAPEL HILL	NC
9.58 /9.68	STERLING	VA

6 METERS

2.58 /2.48	FAIRFAX	VA
2.525/2.525	HENDERSONVILLE	NC
	CHARLOTTESVILLE	VA
2.76 /2.525	KNOXVILLE	TN
2.64 /2.84	FAIRFAX STA	VA
2.01 /3.01	HENDERSONVILLE	NC
	NEWPORT	NC
	CHATTANOOGA	TN
	MEMPHIS	TN
	ABINGTON	VA
	LEXNGTN/COLE MT	VA
	NORTN/HIGH KB	VA
2.03 /3.03	ROANOKE RAPIDS	NC
2.05 /3.05	COPE	SC
2.13 /3.13	ALEXANDRIA	VA
	DANVILLE(DCC)	VA
2.15 /3.15	KNXVL/ENG MT	TN
	BEDFORD/THAX MT	VA
2.17 /3.17	ST MARYS/BENS R	WV
2.25 /3.25	KNOXVILLE	TN
	RIDGEWAY	VA
	ROANOKE	VA
2.35 /3.35	CARY	NC
	KNOXVILLE	TN
2.41 /3.41	PICKENS	SC
2.43 /3.43	RICHMOND	VA
2.47 /3.47	HICKORY	NC
2.67 /3.67	STATESVILLE	NC

CARA SOUTHEASTERN REPEATER ASSOCIATION
SOLO
MEMBER

Representing
UHF-VHF Interests
Throughout North Carolina,
South Carolina, Virginia,
Tennessee, West Virginia
& Eastern Kentucky

CVRA-SERA REPEATER INDEX LISTINGS BY CITY-BY-STATE

NORTH CAROLINA REPEATERS

2 METERS

AHOSKIE	WB4YNF	144.53	145.13	N	A
AHOSKIE	WA4ZGQ	146.31	146.91	N	PA
ALBEMARLE	K4OGB	146.385	146.985		
ASHEBORO	WD4AIB	147.855	147.255		PAL
ASHEVILLE	WA4QCO	146.235	146.835		A
ASHVL/MT PISGAH	WA4BVW	146.16	146.76		
ASHVL/SPIVEY MT	W4MOE	146.31	146.91	N	PA
BENSON	AK4H	147.87	147.27		PA
BOONE/RICH MTN	WA4KDB	147.96	147.36		
BREVARD/TRNS CTY	WB4CJS	147.735	147.135		
BURGAW	K4LZY	146.34	146.94		
BURLINGTON	WB4ZIN	146.07	146.67	N	A
BURLINGTON	W4VGZ	146.475	147.075	N	EA
BURLINGTON	WA4HBQ	147.675	147.075	N	EA
BURNSVILLE	WA4LLR	147.975	147.375		A
CARTHAGE	W4NIW	147.84	147.24		
CHARLOTTE	W4BFB	144.63	145.23		
CHARLOTTE	W4BFB	144.69	145.29		A
CHARLOTTE	N4JEV	144.75	145.35		PA
CHARLOTTE	W4BFB	146.34	146.94		A
CHARLOTTE	W4CQ	146.46	147.06	N	A
CHARLOTTE	WD4PLY	147.99	147.39	N	PA
CHARLOTTE/RTTY	W4BFB	146.175	146.775		R
CHERRY MT	W4TMT	146.07	146.67		
CLINTON	WA4LZD	146.19	146.79	N	
COLUMBIA	K4ITL	144.51	145.11	N	CL
CONCORD/KANNAP.	K4CEB	146.055	146.655		A
CROWDERS MT	WD4PLY	144.85	145.45	N	
DUNN	WB4FXM	146.10	146.70		PA
DURHAM	WA4WTX	144.85	145.45		C
DURHAM	WA4BFT	146.34	146.94	N	A
EDEN/MAYODAN	WA4ACP	147.84	147.24		
EDEN/STONEVILLE	WA4QBG	147.99	147.39		
ELIZABETH CITY	WA4VTX	146.055	146.655		A
ELIZABETHTOWN	N4DHW	146.175	146.775	N	
FAYETTEVILLE	N4EWG	146.205	146.805		
FAYETTEVILLE	WB4YZF	146.31	146.91		A
FAYETTEVILLE	WA4FLR	146.445	147.045		CR
FAYVLLE/FT BRAGG	W4LPL	147.93	147.33	N	
FISHERS PK/WS	W4HKB	144.87	145.47		
FOREST CITY	WA4BKU	147.84	147.24	N	
FRANKLIN	N4AC	144.89	145.49		
FRANKLIN	W4GHZ	147.84	147.24		
GAST/SPCR MT	W4REW	147.72	147.12	N	A
GASTONIA	K4NOQ	146.205	146.805		PA
GOLDSBORO	K4CYP	146.25	146.85		A
GREENSBORO	N4AZM	144.65	145.25		A
GREENSBORO	K4SNI	146.01	146.61	N	A
GREENSBORO	WA4MSS	146.16	146.76		
GREENSBORO	WD4IPZ	147.63	147.03		
GREENSBORO	W4BUZ	147.81	147.21	N	
GREENVILLE	WA4DAN	144.75	145.35		L
GREENVILLE	K4ROK	147.975	147.375		
GREENVL/ESTN NC	W4GDF	147.69	147.09		
GRIFTON	W4NBR	146.085	146.685		
HENDERSONVILLE	WB4YAO	146.04	146.64	N	L
HENDSVL/PINCK MT	WA4KNI	144.67	145.27		A
HENDSVL/STONE MT	WA4KNI	147.855	147.255		A
HICKORY/BRT. MT	WA4MDW	146.25	146.85	N	
HIGH POINT	N4XO	144.81	145.41	N	
HIGH POINT	NQ4T	146.40	147.00		LA
HIGH POINT	NQ4T	147.60	147.00		LA
HIGH POINT	KA4DHP	147.765	147.165		PA
HILLSBOROUGH	WA4WTX	147.825	147.225		A
HILLSVILLE	WD4BTS	147.975	147.375	N	A
HOPE MILLS	WB4TRW	146.445	147.045	N	
JACKSONVILLE	WD4FVO	146.40	147.00		PA
JACKSONVILLE	WR4ATW	147.90	147.30	N	
LAKE NORMAN	WB9GMO	144.75	145.35		A
LAKE TOXAWAY	K4MSK	147.795	147.195		
LAURINBURG	K4QWK	146.025	146.625		A
LENOIR/HIBRITN	KN4K	147.93	147.33		
LEWISVILLE	N4GGK	144.61	145.21		PA
LEXINGTON	K4IZM	146.31	146.91		PA
LILLINGTON	WA4FKI	144.87	145.47	N	
LK NORMN/CLT	WB4KPF	147.615	147.015		
LUMBERTON	W4NHV	147.90	147.30		EA
LUMBERTON	WB4MDI	147.96	147.36		
MACO	WA4LED	147.66	147.06		
MADISON	KA4YFF	146.295	146.895		
MAGGIE VALLEY	W4HCY	147.405	146.805		
MANTEO	K4UOR	146.34	146.94		
MARION/BEAR WLW	KA4DEC	147.705	147.105		
MAYODAN	WV4J	144.55	145.15		
MONROE	KF4NJ	144.79	145.39		C
MONROE	K4BGU	147.30	147.90	N	NB
MONROE/UCARS	K4JCK	147.705	147.105		A
MORENTN/HI PK	WB4UDS	144.55	145.15	N	
MORGANTON	K4VLY	147.75	147.15		
MT AIRY	WA4ZAS	146.37	146.97		EA
MT AIRY-RTTY	WA4ZAS	146.34	146.94		R
MT AIRY/TRNR MT	KD4J	144.73	145.33		A
MT MITCHELL	WA4BVW	144.59	145.19		
N. WILKESBORO	N4AGN	144.77	145.37		LPA
NAGS HEAD/BODIE	KE4PB	146.235	146.835	N	
NEW BERN	WD4JMS	146.01	146.61		A
NEWPORT	K4GRW	144.85	145.45	N	AL
NEWTON	WD4JWO	144.57	145.17		
OLD FORT	KA4ROZ	146.385	146.985		
OXFORD	N4EKK	144.57	145.17		T
RALEIGH	N4BEA	144.67	145.27		PAL
RALEIGH	NW4B	144.79	145.39	N	C
RALEIGH	N4CBI	144.89	145.49		
RALEIGH	W4DW	146.04	146.64		
RALEIGH	K4BWC	146.13	146.73		A
RALEIGH	K4ITL	146.28	146.88		L
RALEIGH	K4ITL	147.75	147.15		PA
REIDSVILLE	K4YFT	146.25	146.85		
ROANOKE RAPIDS	K4ITL	144.71	145.31	N	CL
ROANOKE RAPIDS	K4PUV	147.63	147.03		
ROARING GAP	WB4PZA	146.22	146.82		
ROBBINSVILLE	WD4CNS	146.445	147.045		
ROCKINGHAM	WA4ULA	146.355	146.955	N	
ROCKY MOUNT	K4EWL	147.72	147.12		PA
SALISBURY	W4EXU	146.13	146.73		
SANFORD	WB4EJJ	147.78	147.18		A
SAURATOWN MT	W4RXG	144.51	145.11		R
SAURATOWN MT	NQ4T	146.19	146.79		
SHELBY	WD4DJA	146.28	146.88		
SHELBY	WD4DJA	147.945	147.345		PA
SMITHFIELD	KD4JQ	146.37	146.97		
SMITHFIELD	W4MKL	147.99	147.39	N	
SPARTA/GREEN MT	K4ITL	144.83	145.43		L
SPRING LAKE	WB4KDC	146.115	146.715	N	
STATESVILLE	AI4O	146.085	146.685		PA
STATSVL/ASBRY MT	WA4JRL	147.645	147.045	N	
SWANSBORO	KO4S	146.16	146.76		
THOMASVILLE	WD4LNW	147.435	146.835		A
TRENTON	K4ITL	144.61	145.21		L
TUCKASEGEE	W8OMV	147.90	147.30	N	
UNION CROSS	WA4RBW	147.915	147.315		
WADESBORO	WA4IAT	146.235	146.835		
WASHINGTON	WA4TEP	147.945	147.345		
WAXHAW	WB4OOA	146.295	146.895	N	PA
WAXHAW	WA4ZRS	147.465	146.865		A
WAYNESVILLE	N4SM	147.87	147.27		PA
WHITEVILLE	K4MSD	147.81	147.21		
WILLIAMSTON	KA4KNU	144.81	145.41		PA
WILMINGTON	W4VNK	146.13	146.73		PA
WILMINGTON	K4GMP	146.22	146.82		
WILMINGTON	N4CTJ	147.78	147.18	N	C
WILSON	WB4THL	146.16	146.76		
WINSTON-SALEM	WA4GIC	146.04	146.64		
YOUNGSVILLE	WD4AUI	146.445	147.045	N	

220 MHZ

ASHEVILLE	NC4N	223.00	224.60		
ASHVL/MT PISGAH	WA4BVW	222.34	223.94		
CHAPEL HILL	K2MZ	223.32	224.92	N	C
CHARLT/MINT HL	KE4ZC	222.80	224.40		
CHERRYVILLE	WB4UDS	223.36	224.96	N	
FAYETTEVILLE	W4EHF	222.42	224.02		
GIBSONVILLE	WB4IKY	223.22	224.82		R
GOLDSBORO	WD4OYO	223.36	224.96	N	
HICKORY	WA4MDW	222.42	224.02	N	
HIGH POINT	K4AZA	222.32	223.92		LA
HILLSBOROUGH	WA4WTX	222.34	223.94		L
LENOIR/HIBRITN	KN4K	222.56	224.16		
LINWOOD	KA4HUV	222.38	223.98	N	
LK NORMN/CLT	WB4KPF	223.08	224.68		
LOCUST	WA4ZIA	222.40	224.00		PA
MORGANTON	WB4PML	223.20	224.80		

MT MITCHELL	WA4BVW	222.94	224.54		
RALEIGH	WA4PEN	223.04	224.64	N	
ROCKY MOUNT	KA4DAP	222.36	223.96	N	
SALISBURY	W4EXU	223.16	224.76		
STATESVILLE	WA4PVI	222.70	224.30		
WINSTON-SALEM	WA4YHH	223.04	224.64	N	
WSTFLD/SAUTN MT	W4RXG	223.10	224.70		R
WSTFLD/SAUTN MT	W4RXG	223.28	224.88		

440 MHZ

AHOSKIE	WB4YNF	449.20	444.20	N	C
ASHVL/MT PISGAH	WA4COS	449.90	444.90	N	
CHAPEL HILL	K2MZ	448.875	443.875	N	C
CHARLOTTE	W4BFB	449.60	444.60	N	
CHARLOTTE	W4CQ	449.85	444.85	N	
CHARLT/MINT HL	KE4ZC	449.00	444.00		
DURHAM	WA4WTX	449.10	444.10		PA
FAYETTEVILLE	KB4ZW	449.40	444.40		
FAYETTEVILLE	KB4ZW	449.90	444.90		P
GREENSBORO	N4AZM	448.50	443.50		
GREENSBORO	WB4HZI	449.90	444.90	N	
GREENVILLE	AI4J	449.80	444.80	N	
HICKORY	K4JEQ	449.00	444.00		
HIGH POINT	K4AZA	447.90	442.90		L
LOCUST	WA4LBT	448.70	443.70		
MT MITCHELL	N4DWU	448.65	443.65		
ROCKY MOUNT	N4JEH	449.70	444.70		
SAURATOWN MT	NQ4T	448.50	443.50		
SHELBY	WD4DJA	439.25	427.25		V
WILKESBORO	KC4XE	448.55	443.55		
WILLIAMSTON	KA4KNU	449.65	444.65		
WILMINGTON	KB4BR	449.70	444.70		
WILSON	NE4J	449.90	444.90		

10 METERS

CHAPEL HILL	K2MZ	29.54	29.64	N	C
WILKESBORO	KC4XE	29.52	29.62		L

6 METERS

CARY	WR4AVP	52.35	53.35	N	
HENDERSONVILLE	WB4YAO	52.01	53.01	N	NB
HENDERSONVILLE	WB4YAO	52.525	52.525	N	RB
HICKORY	WA4MDW	52.47	53.47	N	
NEWPORT	K4GRW	52.01	53.01	N	P
ROANOKE RAPIDS	K4PUV	52.03	53.03		
STATESVILLE	WA4WRS	52.67	53.67	N	

EAST KENTUCKY REPEATERS

2-METERS

ASHLAND	KK4Y	146.34	146.94		
ASHLAND	W4KQG	147.84	147.24		PA
DAMRON MTN	K4BGQ	147.87	147.27	N	
ELKHORN CITY	WB4WAU	147.60	147.00		EAO
GUTHRIE	KA4NNE	146.025	146.805	N	
GUTHRIE	KA4NNE	146.13	146.73		
HAZARD	K4VHF	146.07	146.67		
JENKINS	WD4PDJ	147.99	147.39		
LOUISA	WA4SWF	146.13	146.73		EA
LYNCH/BLACK MT	N4IZD	147.945	147.345	N	
MOREHEAD	K4GFY	146.31	146.91		
PAINTSVILLE	WB4WFW	147.69	147.09		A
PIKEVILLE	N4IWZ	144.59	145.19		
PIKEVILLE	N4ETG	146.19	146.79		
PIKEVILLE	N4IXA	146.25	146.85		EA
PIKEVILLE	WB4GEL	147.87	147.27		PA
PRESTONSBURG	K4ICN	144.69	145.29		
PRESTONSBURG	WA4FHK	146.28	146.88		
WINCHESTER	WB4ASZ	147.72	147.12		EA

220 MHZ

ASHLAND	WA4YDN	222.34	223.94		

440 MHZ

LYNCH/BLACK MT	N4IZD	448.10	443.10	N	

The Journal Repeater Index Has Been Corrected As of April 12, 1985

SOUTH CAROLINA REPEATERS

2 METERS

AIKEN	N4ADM	147.885	147.285		
ANDERSON	N4SZ	146.37	146.97		PA
ANDERSON/SAS MT	W4FVV	146.19	146.79		
BAMBERG	WA4DFP	144.73	145.33	N	
CHARLESTON	WB4URP	144.65	145.25	N	
CHARLESTON	K4ILT	146.16	146.76	N	PA
CHARLESTON	W4IVE	146.19	146.79	N	
CHARLESTON	WB4LET	147.87	147.27		PA
CHARLESTON	K4LWS	147.90	147.30		A
CHELSEA	KB4GY	146.01	146.61		
CHERAW	KA4ABW	147.735	147.135		PA
COLUMBIA	KC4LB	144.83	145.43		PA
COLUMBIA	K4AVU	146.28	146.88		
COLUMBIA	KC4LB	146.34	146.94		
DILLON/PEE DEE	NN4N	146.145	146.745		EA
FLORENCE	W4ULH	145.01	PKET	N	
FLORENCE	W4ULH	146.25	146.85	N	A
FLORENCE	WA4ISM	146.37	146.97		PA
FT JACKSON	WB4OCB	146.16	146.76		
FT MILL/CAROWND	AA4SC	147.78	147.18		
GASTON	WB4NEP	144.61	145.21		PA
GEORGETOWN	WD4DMI	147.975	147.375	N	
GOOSE CREEK	WD4NUN	147.675	147.075		A
GOOSE CREEK	W4NAT	147.78	147.18	N	
GREENVILLE	W4AZT	146.10	146.70		A
GREENVILLE	K4LEO	147.375	147.975		NBT
GREENWOOD	KB4YF	147.765	147.165		A
GREER	W4IQQ	146.34	146.94	N	
GRNVLE/CSRS HD	W4NYK	146.01	146.61		
GRNVLE/PARIS MT	W4NYK	146.22	146.82		PA
HILTON HEAD	KB4GY	147.84	147.24	N	P
HODGES/GREENWOOD	KB4YF	144.53	145.13		
INMAN	WD8OXE	144.87	145.47		
LANCASTER	W4PAX	146.10	146.70		
LANCASTER	WB4BGF	147.84	147.24		
LAURENS	KA4LBI	146.25	146.85	N	A
LEXINGTON	KA4FEC	147.99	147.39		
LITTLE MT.	K4AVU	147.81	147.21		
MARION	W4YLT	146.40	147.00	N	EA
MT PLEASANT	K4ESG	146.07	146.67		
MYRTLE BEACH	KI4CB	146.01	146.61		PA
MYRTLE BEACH	WA4YGE	147.72	147.12	N	
MYRTLE BEACH, N	WA4JYR	147.63	147.03	N	PA
N. AUGUSTA	K4FKJ	146.13	146.73		
N. AUGUSTA	K4AUM	146.34	146.94		EA
NEWBERRY	KB4CO	146.085	146.685		
ORANGEBURG	WR4AQY	147.69	147.09	N	A
PICKENS	WB4YXZ	146.40	147.00		
PROSPERITY	WB4OCB	147.84	147.24		
RKY RDG/WALLACE	KA4ABW	144.89	145.49		
ROCK HILL	KA4RFA	144.71	145.31	N	LPA
ROCK HILL	K4YTZ	146.325	146.925	N	PA
ROCK HILL	K4YTZ	146.43	147.03	N	PA
ROCKY SPUR	KS4I	147.885	147.285	N	
SENECA/LONG MT	WA4JRJ	147.87	147.27	N	
SIMPSONVILLE	WA4LDP	146.13	146.73		
SIMPSONVILLE	WA4SDT	147.75	147.15	N	R
SPARTANBURG	WD8OXE	147.69	147.09		PA
SUMTER	WS4P	146.04	146.64		
SUMTER	WA4UMU	147.615	147.015		A
SUMTER	W4VFR	147.66	147.06		A
WHITE HALL	W4BWZ	146.31	146.91	N	

220 MHZ

COLUMBIA	N4EOY	223.30	224.90		LRB
EASLEY/SASFRS MT	KJ4X	222.46	224.06		
LEXINGTON	KA4FEC	222.52	224.12		P
PICKENS/CSRS HD	WB4QHF	222.54	224.14		PA

440 MHZ

CAESARS HEAD	WB4LZQ	448.875	443.875	N	
COLUMBIA	N4EOY	448.00	443.00		PL
COLUMBIA	KC4YI	449.10	444.10		
LEXINGTON	N4GUP	439.25	421.25		V
MT PLEASANT	N4DRU	449.70	444.70		
N. AUGUSTA	WB4OCB	449.15	444.15	N	
PICKENS/CSRS HD	WA6WAY	447.00	442.00		PA
ROCK HILL	KA4RFA	449.75	444.75	N	LPA
SUMMERVILLE	WA4HNK	443.80	448.80	N	NB
SUMTER	N4IGN	449.95	444.95	N	P

6 METERS

COPE	N4HSN	52.05	53.05	N	
PICKENS	WB4YXY	52.41	53.41		

VIRGINIA REPEATERS

2 METERS

ACCOMAC	WA4TVS	147.855	147.255	A
ALEXANDRIA	N4FSC	144.71	145.31	M PA
ALEXANDRIA	WD4PDP	146.055	146.655	M PA
ALEXANDRIA	W4HFH	147.915	147.315	M L
ALTAVISTA	WA4ISI	146.055	146.655	A
ARLINGTON	N4EFJ	144.87	145.47	M
ARLINGTON	WA4YVM	146.445	147.045	M T
BARREN SPRINGS	K4HZS	146.07	146.67	
BEDFORD	WB4DBB	144.63	145.23	
BEDFORD	WB4JBJ	147.705	147.105	LR
BLACKSBURG	AB9I	146.115	146.715	
BLAND	N4AZJ	144.75	145.35	N L
BLUEFIELD	W8MOP	144.89	145.49	
BRISTOL	WDECYZ	146.28	146.88	N
BROMLEY MT	WR4ATJ	146.01	146.61	N
CHARLOTTESVILLE	WA4TFZ	146.16	146.76	
CHARLOTTESVILLE	WA4TFZ	146.325	146.925	
CHESAPEAKE	K4NDH	144.69	145.29	N EA
CHESAPEAKE	N4GSP	146.01	146.61	A
CHESAPEAKE	N4SD	146.19	146.79	A
CHESTERFIELD	KA4CBB	147.96	147.36	
CHESTERFLD CO	WA4ECM	147.66	147.06	
CLIFTON FORGE	K4QEL	147.90	147.30	N
COVINGTON	WA4HTI	146.205	146.805	
CULPEPPER	N4FAF	147.72	147.12	M
DANVILLE	K4YZR	147.95	147.35	N NB
DANVILLE(DCC)	WB4GJG	146.325	146.925	
DANVILLE/WHT OAK	K4WQS	146.10	146.70	N
DUBLIN	KT4Z	147.78	147.18	
DUFFLD/POWLL MT	KA4BHH	146.10	146.70	
FAIRFAX	W4LBL	146.19	146.79	M PA
FALLS CHURCH	W4AQD	144.75	145.35	M T
FARMVILLE	WB4NWP	146.31	146.91	N A
FINCASTLE	W4WIC	146.04	146.64	
FOREST	K4STE	146.16	146.76	A
FRANKLIN	K4SPS	147.90	147.30	N PA
FREDRICKSBURG	WB4LNT	147.615	147.015	
GALAX	WA4ZIV	144.79	145.39	N
GALAX/BRIRP MT	N4VL	147.69	147.09	
GALAX/FRIES	WA4DFH	147.735	147.135	A
GALAX/LKOUT MT	N4VL	144.53	145.13	EA
GATE CITY	WD4GTA	147.945	147.345	N
GRUNDY	K4HWQ	147.92	147.32	N ANB
GUM SPRING	KB4GX	147.87	147.27	
HAMPTON	K4UMI	145.23	PKET	N
HAMPTON	K4DHO	146.13	146.73	PA
HAMPTON	K4UMI	146.34	146.94	N T
HAZEL MT	WD4CYZ	146.235	146.835	N
HILLSVILLE	WD4BTJ	147.975	147.375	A
JONESVILLE	WA4OVC	146.31	146.91	
KILMARNOCK	W2MS	144.61	145.21	N C
LEXINGTON	WA4WBD	146.07	146.67	A
LEXNGTN/COLE MT	K4PQD	147.93	147.33	N
LYNCHBURG	W4WWQ	146.01	146.61	N
LYNCHBURG	AB4M	147.43	144.93	NB
LYNCHBURG	WA4RTS	147.795	147.195	
LYNCHBURG	W4OSH	147.975	147.375	N PA
MADISON	N4AJO	147.99	147.39	M
MANASSAS	WD4JCE	144.67	145.27	M R
MANASSAS	WA4FPM	146.37	146.97	PA
MARION	N4BIW	146.04	146.64	
MARTINSVILLE	AB4L	147.885	147.285	
MCLEAN	WD4IWG	147.81	147.21	M R
MT. LK/BALD KNB	K4TUE	146.31	146.91	N
NEW MARKET	WB4DAK	146.025	146.625	
NEWPORT NEWS	WB4CTF	147.765	147.165	PA
NEWPORT NEWS	WA4OHX	147.975	147.375	N PA
NORFOLK	NE4D	146.10	146.70	
PETERSBURG	N4KAF	147.78	147.18	
PETERSBURG	K4ARO	147.84	147.24	TPA
PETERSBURG	K4ARO	147.99	147.39	
PORTSMOUTH	N4PR	146.25	146.85	
RADFORD	KC4WA	147.645	147.045	
RICHMOND	K4YPE	144.51	145.11	A
RICHMOND	W4SQT	144.83	145.43	
RICHMOND	WB4QEY	146.04	146.64	PA
RICHMOND	WA4ZBE	146.28	146.88	PA
RICHMOND	W4ZA	146.34	146.94	
RICHMOND	WA4JST	146.43	147.03	N
RICHMOND	N4HB	147.735	147.135	
ROANOKE	WB4QET	146.34	146.94	N A
ROANOKE/POOR MT	WB4QOJ	146.145	146.745	LPA
ROANOKE/POOR MT	W4CA	146.385	146.985	
SALEM	W4PDL	146.28	146.88	N
SOUTH BOSTON	WD4LBM	146.46	147.06	
STAUNTON	W4XD	146.10	146.70	
STAUNTON	WA4ZBP	146.25	146.85	
STAUNTON	W4WRN	146.37	146.97	N EA
STAUNTON/EL. KB	W4WRN	147.645	147.045	N
STERLING	WA4TXE	146.115	146.715	M
SUFFOLK	WA4HMT	146.40	147.00	N PA
TAZEWELL	WD4DZE	147.75	147.15	N
TYSONS CORNER	WB4FMD	146.31	146.91	M PA
VIENNA	K4HTA	146.085	146.685	M
VIRGINIA BEACH	WA4KXV	146.37	146.97	PA
VIRGINIA BEACH	WA4SBC	147.645	147.045	N
WARRENTON	WB4FJT	147.765	147.165	M
WARSAW	KA4ZIP	147.93	147.33	
WAYNESBORO	W4BLD	147.63	147.03	
WAYNSBR/AFTON MT	W4PNT	147.675	147.075	
WILLIAMSBURG	W4NTG	146.07	146.67	
WINCH/BLUEMONT	WA4TSC	147.90	147.30	
WINCHESTER	W4RKC	146.22	146.82	
WISE/HIGH KNOB	K4AXO	147.81	147.21	N
WOODBRIDGE	WB4FQR	147.84	147.24	M A
WYTHEVILLE	WA4EMS	146.175	146.775	
YORKTOWN	WD4SDC	147.825	147.225	N

220 MHZ

ALEXANDRIA	WA4CCF	223.22	224.82	M L
DAN/WHT OAK	K4OAK	223.16	224.76	N
FAIRFAX	WB4YHD	222.50	224.10	M L
FALLS CHURCH	N4CHP	223.38	224.98	M PA
GALAX/PT LKOUT	WA4DFH	222.74	224.34	
PETERSBURG	K4ARO	222.40	224.00	
ROANOKE/POOR MTN	WB4DBB	223.34	224.94	
STERLING PK	WD4KHP	222.12	223.72	C
TYSONS CORNER	WD4KHP	223.12	224.72	PL

440 MHZ

ALBERTA	K4ARO	449.55	444.55	N L
ALEXANDRIA	WR4AAG	439.25	426.27	M V
ALEXANDRIA	W4HFH	449.60	444.60	M
APPLE ORCH MT	WB4DBB	449.35	444.35	L
CHARLOTTESVILLE	WA4TFZ	449.25	444.25	
CHESAPEAKE	N4EVG	448.90	444.90	N C
COVINGTON	WA4HTI	447.25	442.25	
FALLS CHURCH	WB8CRK	449.45	444.45	M L
FINCASTLE	W4WIC	448.75	443.75	
HAMPTON	K4UMI	448.65	443.65	N
LEXNGTN/COLE MT	K4PQD	449.15	444.15	N
LYNCHBURG	K4HEX	449.50	444.50	
MANASSAS	WD4JCE	444.225	449.225	M L
MANASSAS	WB3EAQ	448.30	443.80	M
NORFOLK	W4WIN	439.25	426.25	N V
NORTHWEST/SE VA	KR4K	448.80	443.80	N
PETERSBURG	K4ARO	449.85	444.85	
RICHMOND	N4HB	449.00	444.00	
RICHMOND	K4ARO	449.65	444.65	
ROANOKE	N4HON	447.70	442.70	
ROANOKE	WR4AFE	447.75	442.75	N
ROANOKE/POOR MT	W4CA	447.50	442.50	
SALUDA	WA4UAF	448.90	443.90	N
SPRINGFIELD	AA4VA	449.15	444.15	M
STAUNTON	WA4ZBP	449.825	444.825	C
STAUNTON	W4WRN	449.95	444.95	N
TYSONS CORNER	WB6GUS	448.50	443.50	M
TYSONS CORNER	K4JYF	449.75	444.75	M
VIRGINIA BEACH	WA4KXV	449.95	444.95	
WAYNESBORO	W4BLD	449.30	444.30	TPA
WAYNSBR/AFTON MT	W4BLD	449.05	444.05	
WILLIAMSBURG	W4NTG	448.95	443.95	M
WINCH/BLUEMONT	WA4TSC	444.925	449.925	NB
WINCHESTER	W3CSG	447.00	442.00	M
WOODBRIDGE	WB4FQR	444.90	449.90	M

10 METERS

STERLING	KD4DN	29.58	29.68	M P

CVRA REPEATER SYMBOLS

Unmarked in First Code column-Full CVRA Members

N	NON Member CVRA	RB	Remote Base System
NB	Not On Band Plan Freq.	T	Tone Access Repeater
M	T-MARC Repeater	L	Linked Repeater
A	Open Autopatch	R	Radioteletype Rptr.
PA	Private Autopatch	V	Television (SS or ATV)
EA	Emerg. Autopatch	P	Proposed Repeater
		C	Under Construction
		O	Off Air Temporarily

VIRGINIA REPEATERS *Continued*

6 METERS

ABINGTON	WR4ATJ	52.01	53.01	M	L
ALEXANDRIA	WA4CCF	52.13	53.13	M	L
BEDFORD/THAX MT	WB4DBB	52.15	53.15		
CHARLOTTESVILLE	WA4TFZ	52.525	52.525		RB
DANVILLE(DCC)	WB4GJG	52.13	53.13		
FAIRFAX	KA4DCS	52.58	52.48	M	NB
FAIRFAX STA	WD4KHP	52.64	52.84		NB
LEXNGTN/COLE MT	K4PQD	52.01	53.01	N	L
NORTN/HIGH KB	K4LSP	52.01	53.01	N	
RICHMOND	KA4NNN	52.43	53.43		N
RIDGEWAY	KE4FJ	52.25	53.25	N	
ROANOKE	WB4DBB	52.25	53.25		L

TENNESSEE REPEATERS

2 METERS

ALAMO	WB4EDS	147.135	147.735	N	B
ALTAMONT	WR4AWN	146.37	146.97	N	
ATHENS	WB4GRC	144.71	145.31	N	
BENTON	K4SIR	144.85	145.45	N	
BIRMINGHAM(ALA)	WD4BXA	147.285	147.885		ANB
BLOUNTVILLE	WA4KMG	147.60	147.00	N	
BRISTOL	K4ILW	146.07	146.67		A
BRISTOL	WD4CYZ	146.28	146.88	N	
BRISTOL/HLSTN MT	WR4ADO	146.16	146.76	N	
BROWNSVILLE	WA4ABU	146.655	146.055	N	NB
CHATT/SIGNAL MT	WA4ZOK	147.60	147.00		PA
CHATTANOOGA	K4VCM	144.69	145.29		
CHATTANOOGA	W4AM	144.73	145.33		
CHATTANOOGA	KB4TZ	144.79	145.39		A
CHATTANOOGA	K4CMY	146.01	146.61		
CHATTANOOGA	W4DSK	146.19	146.79		A
CHATTANOOGA-RTTY	K4CMY	144.53	145.13	N	
CLARKSVILLE	WA4TEQ	147.60	147.00	N	
CLEVELAND	WD4DES	147.78	147.18		
COOKEVILLE	WA4UCE	146.07	146.67	N	A
COOKEVILLE	N4WS	147.81	147.21		PA
COVINGTON	WA4VXW	147.93	147.33	N	
CROSSVILLE	KE4RX	146.04	146.64	N	
CROSSVILLE	W4CV	147.93	147.33	N	
CUMBERLAND CTY	N4GMT	144.73	145.33	N	
DAYTON/RHEA CTY	K4ZLA	147.99	147.39	N	
DECATUR-PONE KB	W4RJC	144.55	145.15		
DONELSON	WA4BZU	147.885	147.255	N	TPA
DYERSBURG	AA4HF	146.145	146.745	N	
FAYETTEVILLE	KO4G	146.265	146.865	N	
FAYETTEVILLE	W4NIQ	147.63	147.03	N	
FISHERVILLE	N4DRL	144.65	145.25		A
FRANKLIN	WB4HCK	144.55	145.15	N	RB
FRAYSER	W4UFT	146.10	146.70	N	
GALLATIN	W4NIT	147.84	147.24	N	PA
GALLATIN	WA4YQC	147.87	147.27	N	PA
GALLATIN	WB4DLQ	147.99	147.39	N	T
GREENEVILLE	N4TV	144.79	145.39		
GREENEVILLE	WB4TUO	144.81	145.41		
GRNVLE/GRYSTN	WA4LYF	147.66	147.06		A
GTLBG/COVE MTN	WA4KJH	146.25	146.85		LEA
HENDERSONVILLE	WB4WZK	144.67	145.27		
HENDERSONVILLE	WB4WZK	147.915	147.315		P
HENDERSONVILLE	WD4FFM	147.945	147.345	N	
HERMITAGE	WB4DOR	144.79	145.39		
JACKSON	KF4SC	144.71	145.31	N	
JACKSON	W4WKZ	147.81	147.21	N	
JASPER	KD4XX	144.59	145.19	N	
JOHNSON CITY	WB4EHK	146.19	146.79		
JOHNSON CITY	KE4FH	147.87	147.27	N	A
KNGSPT/BAYS MT	W4TRC	146.37	146.97		A
KNOXVILLE	WB4JSD	144.51	145.11		R
KNOXVILLE	K4KFD	144.61	145.21	N	A
KNOXVILLE	WA4TEM	144.73	145.33		A
KNOXVILLE	WA4GZE	144.77	145.37		
KNOXVILLE	WB4GBI	144.83	145.43		
KNOXVILLE	K4HXD	146.34	146.94	N	
KNOXVILLE	K4HXD	147.675	147.075	N	A
KNOXVILLE	W4BBB	147.90	147.30		
KNXVL/CROSS MT	WB4HAP	147.96	147.36		
KNXVL/ENG MT	WB4IOB	146.13	146.73		
KNXVL/HOUSE MT	WB4GBI	144.87	145.47		
LAFOLLETTE	KA4OAK	144.53	145.13		A
LAFOLLETTE/WMT	W4TZG	146.07	146.67		
LAKE CITY	WB4OAH	146.22	146.82	N	
LEBANON	KE4VZ	146.13	146.73		PA
LEBANON	WB4DOR	147.645	147.045		
LENOIR CITY	KE4SK	144.57	145.17	N	
LEXINGTON	WB4LGH	146.43	147.03	N	
MANCHESTER	W4FOT	146.10	146.70	N	A
MARTIN	WA4ZQX	146.625	146.025		NB
MCMINNVILLE	WA4CPJ	144.63	145.23		A
MCMINVL/SHT MT	W4KKO	144.89	145.49		
MEDINA	K4BEZ	146.37	146.97	N	A
MEMPHIS	WA4VIP	144.81	145.41	N	
MEMPHIS	WA4KOG	144.89	145.49	N	
MEMPHIS	WB4MQD	145.33	PKET	N	
MEMPHIS	W4GYS	146.04	146.64	N	
MEMPHIS	KA4JXT	146.13	146.73	N	
MEMPHIS	K4FZJ	146.19	147.51	N	NB
MEMPHIS	W4BS	146.22	146.82	N	
MEMPHIS	WA4KOG	146.25	146.85	N	A
MEMPHIS	WA4ETE	146.28	146.88	N	A
MEMPHIS	K4BN	146.34	146.94	N	A
MEMPHIS	K4FZJ	146.40	147.00	N	
MEMPHIS	WA4MQQ	146.46	147.06	N	
MEMPHIS	W4ZJM	147.63	147.03		L
MEMPHIS	WB4DAZ	147.72	147.12	N	AT
MEMPHIS	WA5KUB	147.75	147.15	N	
MEMPHIS	WA4KOG	147.78	147.18	N	
MEMPHIS	WD4APK	147.84	147.24	N	
MEMPHIS	WA4ADT	147.90	147.30	N	
MEMPHIS	WB4MMI	147.96	147.36	N	
MIDDLEBRO(KY/TN)	W4PPM	144.63	145.23	N	
MILLINGTON/NB	W4ODR	146.43	147.03		L
MORRISTOWN	WD4PRQ	147.63	147.03		EA
MORRISTOWN	WB4OAH	147.825	147.225	N	
MOUNTAIN CITY	WD4OMO	144.87	145.47	N	
MUFREESBORO	N4FJI	144.61	145.21	N	
MURFREESBORO	WB4LHO	144.57	145.17		PA
NASHVILLE	N4AJS	144.65	145.25	N	
NASHVILLE	KA4KNG	144.75	145.35	N	
NASHVILLE	N4ARK	144.87	145.47	N	
NASHVILLE	WA4PCD	146.01	146.61	N	PA
NASHVILLE	WB4NTM	146.04	146.64		EA
NASHVILLE	WB4QES	146.16	146.76	N	
NASHVILLE	W4SQE	146.19	146.79		
NASHVILLE	N4TK	146.25	146.85	N	PA
NASHVILLE	WB4QES	146.28	146.88	N	
NASHVILLE	WA4PCD	146.34	146.94	N	
NASHVILLE	AF4K	147.615	147.015	N	
NASHVILLE	WD4FFM	147.705	147.105	N	
NASHVILLE	WA4PCD	147.75	147.15	N	
NASHVILLE	WA4PCD	147.78	147.18	N	
NASHVILLE	WB4ZSA	147.90	147.30	N	PA
NASHVILLE	N4AJS	147.93	147.33	N	
NASHVILLE S.	WB4NTM	147.96	147.36		R
NASHVILLE S.W.	WB4NTM	146.07	146.67		EA
OAK RIDGE	W4SKH	146.28	146.88	N	
OAK RIDGE	W4SKH	146.37	146.97	N	A
OAK RIDGE	K4EAJ	147.72	147.12		L
OAK RIDGE	K4EAJ	147.75	147.15		R
PARIS	K4KLX	147.96	147.36		A
PEGASUS	WB4SQC	144.69	145.29		A
PIKEVILLE	K4MJM	147.885	147.285		
PULASKI	KA4CCL	146.175	146.775		
SAVANNAH	WB4DQU	146.31	146.91	N	
SHELBYVILLE	W4QEB	147.66	147.06		A
SHIELDS MT	N4CJX	144.67	145.27		EA
SHORT MT	W4YXA	145.01	PKET	N	C
SHORT MTN	W4YXA	146.31	146.91		
SIGNAL MT	AD4F	146.055	146.655	N	
SPARTA/BON AIR	W4BSA	147.69	147.09		A
SPRING HILL	NW4E	144.85	145.45		A
STANTONVILLE	KA4OHC	144.79	145.39	N	
UNION CITY	WA4YGM	147.615	147.015		A
WAVERLY	NO4Q	146.685	146.085	N	NB
WINCHESTER	WR4AFH	146.22	146.82	N	

220 MHZ

CHATT/SIGNAL MT	WA4ZOK	223.30	224.90		
CHATTANOOGA	K4VCM	223.18	224.78		A
CLARKSVILLE	KF4GP	222.34	223.94	N	
FRANKLIN	WD4SGS	222.54	224.14	N	
GALLATIN	WB4ZSA	222.38	223.98	N	PA
GREENEVILLE	WB4NKM	223.34	224.94		A
HERMITAGE	WB4RAB	222.30	223.90		
KNOXVILLE	WA4YON	222.86	224.46		
KNOXVILLE	W4BBB	222.90	224.50		
KNOXVILLE	KB4CTS	223.22	224.82	N	C
MEMPHS/FRAYSER	W4ZJM	222.34	223.94		LO
NASHVILLE	N4TB	222.42	224.02	N	
NASHVILLE	WB4UEX	222.48	224.08	N	
NASHVILLE	N4AWB	222.62	224.22	N	

TENNESSEE REPEATERS

440 MHZ

ALAMO	WB4EDS	448.75	443.75	N	L
CHATT/SIGNAL MT	WA4ZOK	439.25	427.25		V
CHATTANOOGA	WA4NFO	449.10	444.10	N	
FISHERVILLE	N4DRL	432.01	BEACON		
FISHERVILLE	N4DDS	449.30	444.30		A
FRANKLIN	WB4EPG	447.80	442.80	N	
GALLATIN	WD4BKY	449.35	444.35	N	
GALLATIN	WD4KWP	449.45	444.45		
GATLBG/COVE MT	WA4KJH	448.30	443.30		L
GREENEVILLE	WB4NKM	449.65	444.65		
HOOVER(ALA)	K4FUM	449.30	444.30		NBA
KNOXVILLE	WA4NTZ	447.50	442.50	N	
KNOXVILLE	K4HXD	449.30	444.30	N	
KNOXVILLE	KB4NK	449.60	444.60		
KNOXVILLE	WB4GBI	449.70	444.70		
MEDINA	K4BEZ	447.05	442.05	N	AL
MEMPHIS	WA4KOG	444.40	449.40	N	NB
MEMPHIS	WA4QWW	447.80	442.80	N	
MEMPHIS	W4ZJM	448.00	443.00		O
MEMPHIS	WA4DOA	448.40	443.40	N	A
MEMPHIS	KA4JKT	449.50	444.50	N	A
MEMPHIS	WD4APK	449.80	444.80	N	
MILAN	WD4ABJ	447.10	442.10		
MORRISTOWN	KA4NEX	449.20	444.20	N	
NASHVILLE	WA4PCD	449.55	444.55	N	
NASHVILLE	WA4PCD	449.675	444.675	N	
NASHVILLE	N4TK	449.775	444.775	N	
NASHVILLE	WB4THG	449.875	444.875	N	
NASHVILLE	WB4QES	449.975	444.975	N	
OAK RIDGE	K4EAJ	449.40	444.40		L
PARIS/GROVE HL	WA4WKS	448.50	443.50		

6 METERS

CHATTANOOGA	WB4LRD	52.01	53.01		
KNOXVILLE	WA4YON	52.25	53.25		
KNOXVILLE	WB4GBI	52.35	53.35		C
KNOXVILLE	K4HXD	52.76	52.525	N	NB
KNXVL/ENG MT	WB4IOB	52.15	53.15		
MEMPHIS	WA4KOG	52.01	53.01	N	

10-METERS

MEMPHIS/FRAYSER	W4ZJM	29.52	29.62

WEST VIRGINIA REPEATERS

2 METERS

BECKLEY	KC8FW	144.77	145.37	N	LA
BKLY/FLAT TOP MT	K8BO	146.25	146.85	N	A
BOLT MT	KD8X	144.57	145.17	N	L
BRIDGEPORT	K8VNQ	147.72	147.12		EAL
BUCKHANNON	K8WYH	146.25	146.85	N	
CHARLESTON	W8WHQ	144.83	145.43	N	
CHARLESTON	WB8IFS	146.22	146.82	N	
CHARLESTON	WB8CQV	146.28	146.88	N	
CLARKSBURG	WB8ZVS	146.22	146.82		
CLARKSBURG	WB8DTM	146.50	52.525	N	NB
DUNBAR	K8VKI	147.72	147.12		
EAST RIVER MNT	WD8OGY	146.355	147.955		A
FAIRMONT	W8SP	146.30	146.90		
FAIRMONT	W8SP	146.31	146.91		
FRANKLIN	W3RUA	147.945	147.345		
GRAFTON	K8VNQ	147.975	147.375		L
HARRISVILLE	WB8NSL	147.90	147.30	N	
HERNDON	WA8VDZ	146.025	146.625		LA
HUNTINGTON	WB8FEQ	144.61	145.21		R
HUNTINGTON	WB8EZR	146.04	146.64		
HUNTINGTON	W8VA	146.16	146.76		A
HUNTINGTON	KA8BKX	147.90	147.30		PA
KENEY MT/ALDSN	WA8AVZ	146.13	146.73		
KINGSTON/LICK KB	W8FG	144.87	145.47		
LAYLAND/MANN MT	N8BZS	144.71	145.31	N	L
LEON	WB8NMT	147.78	147.18	N	
LIBERTY	K8SLI	144.81	145.41	N	P
LOGAN	WD8KWC	144.63	145.23	N	
LOGAN	WA8ZLR	146.09	147.11	N	ONB
LOGAN/WARD RK MT	WD8DRV	146.37	146.97		
MADISON	KA8JYR	146.06	147.06	N	NB
MARMET/BEE MT	N8DBN	144.55	145.15	N	
MARTINSBURG	WA8FSE	144.55	145.15	M	
MARTINSBURG	WB8VAZ	147.855	147.255	M	
MCMECHEN	WA8ULB	146.31	146.91		PA
MONTGOMERY	WB8VUY	147.99	147.39	N	
MORGANTOWN	K8LG	144.83	145.43	N	L
MORGANTOWN	W8CUL	146.16	146.76		LPA
MULLENS	KC8IT	147.63	147.03		LA
NEW MARTINSVLLE	WB8CSW	146.34	146.94	N	
OAK HILL	W8GH	146.19	146.79		EA
PARKERSBURG	WA8CRW	146.37	146.97		
PARKERSBURG	W8JZN	147.99	147.39		
PARSONS	K8VNQ	144.73	145.33		EAL
PCTN/EAST RIVER	WD8OGY	146.355	146.955		
POINT PLEASANT	W8KNM	147.66	147.06	N	
PRINCETON	KA8PNC	146.46	147.06		A
RAVENSWOOD	WD8JNU	146.07	146.67		
RAVENSWOOD	WD8JNU	146.10	146.70		R
RICHWOOD	K8VKB	146.34	146.94		
RIPLEY	K8SNW	146.31	146.91	N	P
SALT ROCK	WD8MCR	144.51	145.11	N	
SCOTT DEPOT	K8SLI	147.87	147.27	N	A
SHERRARD	N8GL	146.115	146.715		
SPENCER	KA8AUW	146.01	146.61	N	
ST ALBANS	WB8GDY	146.40	147.00		
ST ALBANS	K8BCH	147.975	147.375		R
ST ALBANS/COAL	WB8KAD	146.12	146.72	N	PA
ST ALBANS/COAL	WB8OEC	147.75	147.15	N	
ST MARYS/BENS R	WB8ECC	147.63	147.03	N	L
TERRA ALTA	WB8PHU	147.60	147.00		PA
WEIRTON	KC8JN	146.34	146.94		A
WELCH	WB8SXZ	144.85	145.45	N	
WESTON	WD8EOM	144.79	145.39		PA
WHEELING	W8YFX	144.59	145.19	N	
WHEELING	W8JDH	146.16	146.76	N	

220 MHZ

HUNTINGTON	KA8BKX	222.54	224.14	N	
KINGSTON/LICK KB	W8FG	223.14	224.74		

440 MHZ

LICK KNOB	N8FRV	449.80	444.80	N	
MORGANTOWN	K8LG	449.70	444.70	N	L
MORGANTOWN	W8CUL	449.80	444.80		PA

6 METERS

ST MARYS/BENS R	WD8RET	52.17	53.17	N	L

GEORGIA REPEATERS

NOTE: Only Full Member Repeaters in Georgia are listed

2 METERS

ALBANY	WB4TFW	147.75	147.15		
ATHENS	WA4BKF	147.225	147.825		A
ATHENS	K4TQU	147.375	147.975		NB
ATLANTA	W4DOC	146.22	146.82		PA
ATLANTA/BELL	W4PME	144.81	145.41		
ATLANTA/GA TECH	W4AQL	144.55	145.15		PA
AUGUSTA	W4TUN	144.51	145.11		A
AUGUSTA	N4JA	144.77	145.37		
AUGUSTA	W4LWT	146.04	146.64		
AUGUSTA	NA4I	146.385	146.985		PA
AUGUSTA	W4ALK	147.72	147.12		PA
AUGUSTA/MARTINEZ	WB4YHT	144.89	145.49		
BALDWIN	WD4NHW	147.78	147.18		A
BLAIRSVILLE	N4EFL	147.705	147.105		
CEDARTOWN	W4CMA	147.72	147.12		PA
CUMMING/SAWNEE	K4BYK	147.75	147.15		PA
DALTON	K4WNG	144.63	145.23		
DALTON	N4BZJ	144.65	145.25		
DALTON	KC4TT	147.315	147.915		NB
DALTON	N4BZJ	147.735	147.135		
DALTON	KE4LN	147.81	147.21		
DECATUR	WB4CPL	144.75	145.35		
DOUGLASVILLE	KB4EO	147.96	147.36		A
GAINESVILLE	W4NSO	146.07	146.67		A
GRIFFIN	WB4GWA	144.79	145.39		PA
HARTWELL	KY4T	146.895	146.295		BEA
LANIER MT/SNLV	WD4JXR	147.675	147.075		PA
MARIETTA	WA4QPL	144.89	145.49		PA
MILLEDGEVILLE	KF4LI	144.55	145.15		A
NEWNAN	K4SEX	144.53	145.13		PA
NEWNAN	K4SEX	146.19	146.79		
ROSSVILLE	KC4EV	144.75	145.35		
SAVANNAH	W4HBB	146.28	146.88		
SAVANNAH	W4HBB	146.37	146.97		A
TOCCOA	KA4DIP	147.93	147.33		PA

GEORGIA *Continued*

220 MHZ

DALTON	N4BZJ	223.28	224.88	
ROSSVILLE	KC4EV	223.34	224.94	

440 MHZ

ATLANTA	W4DOC	444.825	449.825	
ATLANTA/BELL	K4LDR	449.15	444.15	
CHATSWORTH	AA4EO	448.00	443.00	
DALTON	WA4TIW	449.735	444.735	
GRIFFIN	WB4GWA	448.90	443.90	PA

Full Membership Reaches All—Time Record Numbers

— by Gerry Butts, Full Mbrship. Chrmn.

The total as of April 9, 1985 stands at 324-Full Memberships, representing 437 repeaters in the six CVRA-SERA Districts, Alabama and Georgia. If you drop the Full Member count in the States which are not Districts, we have a total representation of 53% of 747 repeaters in the six Districts. (This repeater number includes all of Virginia, where the Northern part is considered T-MARC territory.) If you deduct T-MARC non-members, our representation would be about 56%

Our newest District, East Kentucky has taken off with a bang. Of 22 repeaters in their District, 14 are CVRA-SERA Full Members, or 64%.

North Carolina continues to lead all categories with 140 member repeaters, representing 68% of the entire District. Virginia has 88 full member repeaters for a total of 50% (again counting T-MARC repeaters).

Tennessee has 80 Full Member repeaters for 42%, while South Carolina has 55% membership representing 48 Full Member repeaters. West Virginia has 38 Full Member machines for a total of 54%.

Non CVRA-SERA Districts with Full Member repeaters include Alabama with 2 machines and Georgia with 40 machines.

Since our February tabulation of total machines, 10 more have been added to the overall list. Some states had more machines come on, but others went off to cancel out any additional numbers. In the final analyis, East Kentucky added 5, South Carolina 4, and Tennessee 1.

Full Membership is available to all repeaters in the CVRA-SERA territory. Repeater owners wishing to join may send in a completed application to CVRA-SERA Full Membership, P.O. Box 5655, Greensboro, N.C. 27435. By joining, the named repeater will have the "N" removed in our index, and 2 persons named will receive the Journal. ALL Full Memberships expire on December 31 of each calendar year.

Dues through June 1st are $7.50. After June 1st $5.00 for remainder of year.

BR549 Bluefield Is Back On Air

— by Don Williams, Jr. WA4K

Thursday, March 21, was the date that the East River Amateur Radio Club finally got their 145.49 repeater back on the air in Bluefield.

The machine, known as BR549 (Bluefield Repeater 145.49), has been off the air due to lightning since last September. Replacement funds were raised from insurance proceeds, an appropriation from the club treasury, and donations.

Since its return, BR549 has joined the CVRA Nes Net, a QST conducted by Wayne Williams, K4MOB, which orginiates on The Piedmont Coastal Repeater Network in North Carolina. The net was first carried on Wednesday, March 27th.

The Bluefield repeater also carried the North American Teleconferencing Radio Net on Friday, March 29th, which involved over 150 repeaters nationwide. It was the only repeater in West Virginia, south of Charleston carrying the net, and to this writer's knowledge, the only one in Virginia to the West of Bedford.

BR549 will carry the next NATRN on June 14th.

The Bluefield machine is a Mark 4CR repeater, made by Micro Control Specialties.

Its controller is microprocessor - based, and the system has synthesized voice, autopatch, autodial, voice time readout, received signal analysis readout, NOAA weather, and other features.

Located on East River Mountain straddling the West Virginia-Virginia state line, the repeater is approximately three miles West of the East River Mountain Tunnel on Interstate 77. The repeater is easily accessible from about mile 35 in Virginia to mile 32 in West Virginia. Hilltopping extends the range North and South. East-West range is limited to approximately 15 miles except for hilltopping due to the East River Mountain range. It is accessible in the Blacksburg-Christiansburg area, but you have to pick your spot. Parts of Interstate 81 provide access, especially from Pulaski to Christianburg.

Other equipment includes Phelps-Dodge Super Stationmaster antenna, 1/2 inch hard line, 4-cavity 100 dB Waycom duplexer, 1 kva Sola constant voltage transformer for isolation and lightning protection, and MOV's and other lightning protective devices.

Upgrade & Frequency Change for Columbia

— by Bob Burks, KC4LB

The Columbia Amateur Radio Club has upgraded and changed frequencies on one of its two Columbia-area repeaters. The old 147.96/7.36 K4LNU repeater is now the 144.83/5.43 KC4LB repeater, complete with voice-synthesized ID, pad tester, and time check. The repeater also has autopatch and autodial capabilities.

The club's 146.34/6.94 downtown repeater is now signing KC4LB.

NC 220 Repeater Moves To Anderson Mt.

— by Lee Harris, WB4KPF

The WB4KPF 223.08/224.68 repeater is back in service, located on Anderson Mountain, North of Charlotte. It's the same machine built by K4PRK, KA4DNL, WA4LQS, WD4CFZ, AA4ZZ, and WB4KPF, and originally located South of Charlotte on a 100 ft. tower.

The repeater went on in late February, but antenna and desense problems limited its performance. A new Homebrew Collinear antenna and a WACOM cavity on the transmitter have made a big improvement. Handheld coverage should extend into Charlotte, Hickory, and the Lake Norman area, although coverage to the East toward Salisbury is poor at present.

The machine is sponsored by Bill Parris AA4R and Lee Harris WB4KPF. It was installed primarily to cover the lake area, and to provide a local 220 "Gathering Place". So far, about a dozen stations are using the repeater.

The transmitter and receiver came from a Clegg FM-76. Other equipment includes the WACOM filter, Spectrum controller, A.R.R. Pre-AMP, and V.H.F. engineering 450 control link. Improvements in the works include a higher gain transmit antenna, better shielding, battery back-up power, and increasing E.R.P. to about 100 watts.

I convinced my club to buy a repeater controller from ACC and I'm glad I did.

The group I belong to was looking to upgrade our system and I was the one asked to investigate. Of course, we've always been the best in our area but we needed more. We needed a system that was reliable, easy to interface, cost-effective, and something that would free-up the technical committee for more interesting projects than just keeping the equipment running.

Everyone in the club put a few bucks into the pot and it was ours!

We really use the features like the scheduler, remote programming (from an HT, over the phone, or via a computer terminal), informative voice messages and courtesy tones, telemetry, remote bases, and the most sophisticated autopatch ever designed for amateur use.

Of course, the controller is state-of-the-art, commercial quality, and built to last. Workmanship so solid even the military uses them.

What impressed me even more, though, is the support we get from the staff at ACC — both before and after the sale. And they protect our investment through simple plug-in software up grades . . . new features and capabilities that keep our club on top.

I feel good about recommending the Advanced Computer Controls' line of repeater controllers. After all, it's *my* club's money that was spent and *my* reputation that was on the line.

Call or write for detailed specifications on the RC-850 and RC-85 Repeater Controllers.

acc advanced computer controls, inc.

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WEST VIRGINIA NOTES

By: Ted Wolfe, WD4KHL

The Fayetteville, WV, Hamfest held on Sunday, Feb. 24 was again a success. It was well attended and the weather was agreeable for the event which is held inside at the Fayetteville High School. The weather, in fact, was a real treat after the snow storms of early February. In one of those storms Logan had 18-inches of snow. The Plateau ARC sponsors the Fayetteville hamfest every February -- the first one in our immediate area.

• • • •

Frank, WA8VRS, Garry, WD8OMB, and I drove to Charlotte, leaving my QTH t 3:00 a.m., Saturday, Mar. 16. We stayed the day, but drove back home the same evening, arriving at 9:30 p.m. It was Frank's first visit to Charlotte and he was well impressed.

I missed Charlotte in 1984, so I could see the growth since 1983, the way the flea market area filled up all the space around the commercial exhibits. I guess Charlotte will have to have more space in 1986.

• • • •

A number of area hams have been inquiring on 2-meters about the date for this year's Huntington, WV, hamfest, usually held during the summer months. It is not listed in the Journal's COMING EVENTS section. Sponsors may have forgotten to notify us or it could mean Huntington will forego a hamfest this year. How about some input from Huntington area hams on this?

• • • •

The Kanawha ARC and the Tri-County ARC are cooperating to stage a hamfest in the capital city area. It is tentatively scheduled for Aug. 11. It will be held inside at the South Charleston Community Center which has parking for 300 cars.

• • • •

Please note the call and location change on the old McMechen N8CFX 147.75/15 repeater. The call on this Triple States Radio Amateur Club (TSRAC) #2 repeater is now KD8GL. The listing is being changed to **Sherrard, WV.** The club is coordinating a new frequency to move away from the interference caused by users of a repeater in Western Pennsylvania. The new frequency pair is 146.115/715. For convenience of out-of-state hams Sherrard is near Wheeling, WV.

• • • •

Jay Paulovicks, KD8GL, writes in the March TSRAC newsletter "B-N-T" about the repeater and its features, including the "Speed dial" feature. A user is able to speed dial and access some 20 different agencies, including a number of town police departments in the repeater's coverage area as well as State Police in two states and several county Sheriff's Departments.

• • • •

And for this issue of the **Journal**, which features a number of stories on the topic of Packet Radio, we note from "B-N-T" that Ben Hitt, N8FSY, who writes the "Technical Tidbits" column for the mewsletter, has a nearly continuous digipeater operating at St. Clairsville, Ohio. It is on 145.010 Mhz. The machine emits a packet beacon every ten minutes that goes "de N8FSY in St. Clairsville, Ohio, for digipeating."

The **Journal** will, as a service, list such machines to assist those just getting started in Packet Radio. It helps to know where the nearest digipeater is operating. Just let the **Journal** know when you get your digipeater on the air.

• • • •

Recommended reading for hams: "The Computer Comes of Age" by R. Moreau, who is Director of Scientific Development, IBM France, an interesting history of the development of the computer, published in 1984 by MIT Press, Cambridge, Ma., and London, England; and "Telecommunications in the Information Age" by Loy A. Singleton, 1983, by Ballinger Publishing Company, Cambridge, Ma.

This next book hasn't anything to do with hams, computers, or radio, but for writers or budding investigative reporters, check out "The Reporter's Handbook" (An Investigator's Guide to Documents and Techniques), published by St. Martin's Press, New York, under auspices of Investigative Reporters & Editors, Inc.

Cal White, W8ZHN, Charleston, provided this photo of his station wagon showing the 40-meter home-made DDRR (Directional Discontinuity Ring Radiator) roof-mounted antenna. He also uses a commercially built DDRR for two meters, but it does not show on the dashboard in this picture. Cal has been experimenting with DDRR antenna for over a decade. (Ted Wolfe - WD4KHL)

Work is underway to put a repeater on at Craigsville, WV, working through CVRA/SERA for coordination. Another

Continued on Page 38

July 27 thru Aug. 9, 1985

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FM-2033

2m C-MOS MICROPROCESSOR CONTROLLED
DIGITAL SYNTHESIZER FM TRANSCEIVER

Shown actual size.

6 in 1

Exclusive KDK 6 in 1 control is now joined by 6 exciting new KDK features:

NEW! % Soft Orange background Liquid Crystal Display (LCD) for direct sunlight viewing plus lighting for night viewing.

NEW! % Offset (+, –, S) stored in memory along with the frequency information.

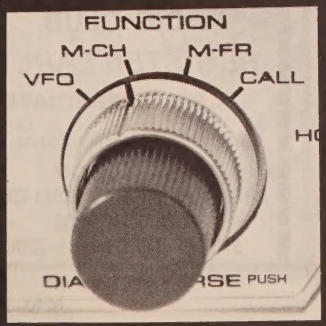
NEW! % Frequency coverage of 142.000 to 149.995 MHz for M.A.R.S. and C.A.P. usage.

NEW! % Chrome front panel with accent knobs and lighter color on case to match today's auto decor.

NEW! % Scan for signal now has 3-second delay before resume after loss of signal.

NEW! % Repositioned controls for more convenient operation.

The Exclusive KDK 6 in 1 Knob.



- Only memories with data are scanned; blanks are skipped.
- Complete memory back-up with power unplugged. Re-chargeable Ni-Cd with capability of several months back-up of memory.
- Single frequency sub-audible tone generator included as a standard feature.
- Tone unit switch on front panel to prevent "humming" on the wrong channel.
- Repeater input monitor capability with the push of a single momentary switch.
- Solid-state level meter for both output level and input level monitoring.
- User programmable initial characteristics for band limits, channel step size, etc.
- Odd repeater splits can be handled with the memory in the AxB mode.
- Programmable band-scan limits are stored in protected RAM.
- Modular construction with pluggable interconnecting wiring.
- Touch-Tone* microphone TM-2 is standard with each radio.
- Change channels, skip-scan or step up and down the band from TM-2 microphone.
- Audible beep for end-of-band or last memory location for better "eye's off" operation.

The KDK FM-2033 represents a significant advance in user convenience and simplicity of operation for the radio user. The KDK '33' series of transceivers provides excellent readability in any lighting condition for either the operating frequency or the memory channel number in use. The use of a warm orange background for the LCD displays improves the readability by providing an easy on the eyes contrast improvement.

Simplicity of operation has always been the mark of the KDK design team and the FM-2033 is no exception. From the single knob frequency and memory selection to the automatic recall of the desired repeater offset from memory, the FM-2033 continues to provide relaxed, comfortable mobile operation.

Once the 10 memory frequencies have been selected, a single knob is all that is required for operation on the standard simplex or repeater channels. Using the audible beep as the end of memory marker allows setting to a particular channel without even looking at the radio.

In the scan mode, scanning for a busy memory or pre-programmed band scan keeps you up to date on the happenings in the area. Very busy frequencies can be skipped by using the up key on the TM-2 microphone. If a full 10 memories are not used, the unused ones can be marked for scan skip so that no time is wasted checking them.

The FM-2033 provides a clean 25 watt output signal across 142 - 149.995 MHz to operate in balance with most repeater signals and provide quieting on the simplex operations. M.A.R.S. (NAVY too!) and C.A.P. frequencies are also accommodated.

You want convenience, reliability and easy operation for your mobile station and a tough to beat dollar value. Check out the FM-2033 at your local dealer TODAY or send a QSL for specifications.

* Touch Tone is a Registered Trade Mark of American Telephone and Telegraph.

Specifications are nominal and are subject to change. All KDK transceivers meet or exceed FCC regulations regarding spurious emissions.

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GRAND-DADDY'S COMING BACK

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The Grand-daddy of them all!

28th Annual Shelby, N.C. Hamfest

August 31 and September 1

Business 74, East of Shelby, N.C. At Cleveland County Fairgrounds

FCC EXAM - Saturday, August 31, 9:00 a.m. Cleveland Technical College adjoining Hamfest Grounds. Mail 610 form, $4.00 check, and copy of present License to CHARLOTTE VEC, 227 BENNETT LANE, CHARLOTTE, N.C. 28213. Cut off date August 24. Appointment tickets will be mailed.

REMEMBER LABOR DAY WEEKEND

PRE-REGISTER EARLY AND SAVE!

- **$5.00 AT THE GATE**
- **$4.00 PRE-REGISTRATION**

PRE-REGISTRATION PRIZE: SANTEC ST-200ET HANDHELD

OTHER PRIZES TO BE ANNOUNCED IN OUR MAILER AND IN THE AUGUST ISSUE OF THE REPEATER JOURNAL

For Dealer Reservations Contact:

Stephen T. Roberts, N4FMH
207 Osborn St., Shelby, N.C. 28150
Phone (704) 482-1276, after 4:00 p.m.

David Rose, WD4DJA
1516 Knox Drive, Shelby, N.C. 28150
Phone (704) 487-5654 (Weekends only)

For Further Hamfest Information:

Pharis Greene, KB4AF
717 Mayo Street
Shelby, N.C. 28150
Phone (704) 482-5204

REMEMBER - This is your Hamfest. No Member of the Shelby ARC, or their Families are eligible for any Prize.

CUT OFF DATE FOR PRE-REGISTRATION IS AUGUST 15, 1985

Pre-Registration Form I would like to pre-register for

THE SHELBY HAMFEST

Enclosed is my check for:

_____ Hamfest Tickets @ $4.00 Each. . . . .$ _____

Age 12 and Under FREE All Tickets good for both days

Name _____ Call _____

Address _____

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S.A.S.E. APPRECIATED

Mail Check & This Form To:

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Welcome To Our New Associate Members

— by David Ward, KA4LVO

A good number of people have responded to applications printed in other January and February newsletters, so this is the first Repeater Journal you have received. We welcome you to the organization and hope that you will be favorably impressed when membership renewal time comes.

Because these newsletters appeared before the February issue was mailed, very few people knew that associate membership dues had increased from $4.00 to $5.00 a year on January 7, 1985. Consequently, many new memberships came in at the old $4.00 rate stated on the application. For these cases, we have pro-rated the amount received at the new $5.00 per year rate, or 10 months for every $4.00 received. To see how this pro-rating has affected your term of membership, check the date in the lower right hand corner of your mailing label.

Courson New PIO For League HQ

Paul Courson, WA3VJB, has been hired as the new ARRL Public Information Officer. Paul comes to the League with over six years experience in the field of broadcast journalism. In the past, Paul has worked as a reporter, news writer, news director and anchor.

Paul will be working at the ARRL Development Office, 1920 N St., NW, Suite 520, Washington, DC, 20036 and he can be reached at (202) 429-9748.

Editorial Comment

Then There Were Six

Continued From Page 1

Vice—Director who will assume the jobs of Frequency Coordinators for that area.

Full Membership in CVRA-SERA at press time stands at 67% of all the repeaters counted in the new District. Since all the rest voted for District Status, it is likely they will also join as Full Member repeaters. (Is it possible for 100% membership in a District???)

CVRA-SERA entered its 14th year in 1985. Our leaders and our repeater owners have made our organization quite successful in their goal to coordinate, keep our interference, and problems to a minimum. This has all been done over the past 13 years with cooperation from owners and users of repeaters in our fine Districts.

CVRA-SERA started in 1971 when a group formed the North Carolina FM Repeater Association, with a goal of coordinating repeaters which were able to come on the new exciting FM 2-meter band.

In 1973, Virginia and South Carolina joined NCFMRA and the name was changed to The Carolinas, Virginia Repeater Association, (CVRA).

The years 1974 to 1980 were tremendous growth years in repeaters, users, and membership in CVRA. Membership went from 250 to 3000.

In 1980-81, Tennessee and West Virginia became the fourth and fifth Districts to join CVRA. In 1981, the name was changed to CVRA-Southeastern Repeater Association, Inc. (CVRA-SERA).

Now in 1985, we take great pride and pleasure in welcoming the fine Amateur repeater owners and users from Eastern Kentucky. We are very happy to have you on board!

Georgia Fellas Sure Have Got Us Confused

Continued From Page 1

due to have been in the mail before you read this. As of April 6, Carter said he had received only 6 petitions back of the original 35 mailed.

I might inject something to you Full Member repeaters in Georgia. As it stands now, your Full Membership gives you nothing in the world but a Journal. Our organization has NO authority to coordinate, or operate in Georgia. Until such a time as you folks create a "District", elect your Director and Vice Director, nothing will change. None of our existing Directors has authority to do any coordinating out of his own District.

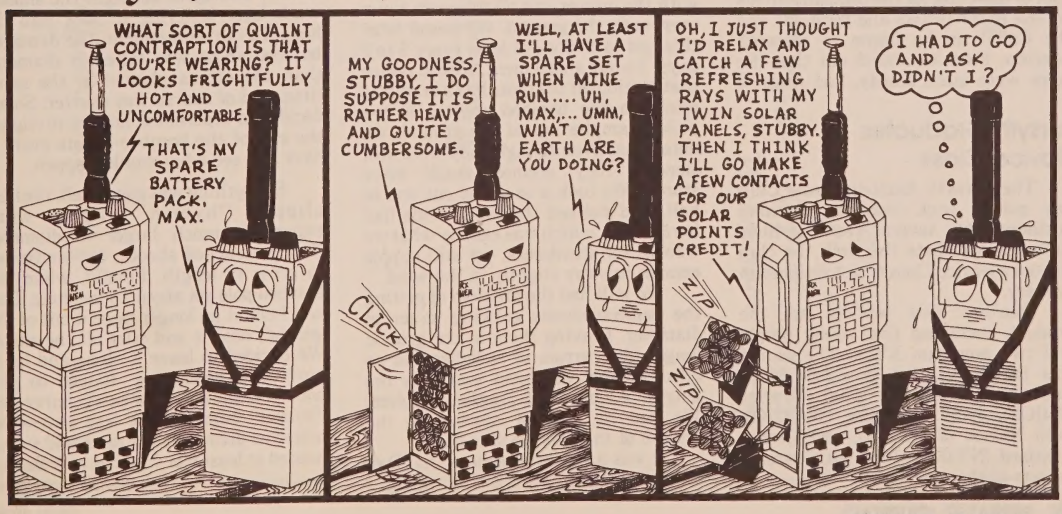
So folks, this may be your last chance. I believe CVRA-SERA has spent enough time over the past four years on this issue. The rest is up to you.

Do you want to join CVRA-SERA and establish Frequency Coordinators sanctioned through our organizations, do you want to set up your own Frequency Coordination Council, or do you want things to remain as they are and have been?

The answer is clearly up to you!

— by Wayne C. Williams, Editor

Stubby *by Fred Hurteau, WD4SKH*


WHAT SORT OF QUAINT CONTRAPTION IS THAT YOU'RE WEARING? IT LOOKS FRIGHTFULLY HOT AND UNCOMFORTABLE.
THAT'S MY SPARE BATTERY PACK, MAX.
MY GOODNESS, STUBBY, I DO SUPPOSE IT IS RATHER HEAVY AND QUITE CUMBERSOME.
CLICK
WELL, AT LEAST I'LL HAVE A SPARE SET WHEN MINE RUN.... UH, MAX,... UMM, WHAT ON EARTH ARE YOU DOING?
OH, I JUST THOUGHT I'D RELAX AND CATCH A FEW REFRESHING RAYS WITH MY TWIN SOLAR PANELS, STUBBY. THEN I THINK I'LL GO MAKE A FEW CONTACTS FOR OUR SOLAR POINTS CREDIT!
ZIP
ZIP
I HAD TO GO AND ASK DIDN'T I?

A Billion Dollar Idea That Didn't Work

—by Wayne C. Williams, K4MOB

I have been a ham for the past 25 years or so. I've always looked for a better way to do something. But since I have had so many failures with my fabulous schemes, I'm now basically an appliance ham. I buy it, install it and use it. If it breaks, I send it back.

It wasn't always this way. I can remember back in the early 70's, several friends and myself were always trying to invent something that would benefit Amateur radio, and most of all, benefit our pocketbooks.

Some of our failures included the "Self-Induced Temperature Inversion" and tomato vine dipoles.

Perhaps the most unbelievable idea occurred in 1975. One of my close friends and I decided to see if we could make antenna towers out of bamboo poles.

My friend, Dan McMillan, W4DGE was a top-notch engineer from Bell Labs, located near Greensboro, N.C. (the Company has now gone to Whippany, N.J., and you know about the A.T. & T. break up, which I hope had nothing to do with Dan's ideas in the company) Anyway, Dan and I after several failures at other "brilliant ideas" decided that there should be a better way to mount antennas high in the air, without planting massive telephone poles, erecting expensive metal towers, or poling up telescoping mastpoles with 300 guywires.

After several weeks of looking for the proper ingredients, Dan came up with the idea of developing a "hybrid" bamboo pole, capable of handling a tri-band antenna and at least 2 eleven element beams.

Being a Bell Labs "Wheel", Dan did a lot of traveling for the company. In his travels to the tropics and Bermuda and the Carribean he began to research bamboo. First we found out that the poles were quite sturdy, had rings of protruding "bark" every few feet and grew quite tall under proper conditions. There was however one problem. Most of the bamboo canes were hollow, which of course was a liability in our plan for the perfect tower installation.

Weeks, and then months passed, as Dan and I consulted Bell Labs computers, researched Bamboo and learned about this tropical wonder.

As we learned more about the product, the more excited we got. Finally in April of 1976, the time had come. We decided to plant some bamboo shoots in my back garden, behind the tomato patch.

We watched them carefully day after day, and to our disapointment the shoots shot skyward fast, outgrowing our portable "greenhouse." The only problem, the bamboo shoots were quite slender, brittle and were still hollow... what do we do now??

Dan suggested that the upward growth of the bamboo shoots could be controlled by planting the small shoots upside down, allowing the shoot to grow into the ground. So we set about reversing some freshly planted shoots.. upside down.

New problems came about immediately. The roots started popping out of the ground skyward, were immediately bleached by the sun, and became an eyesore to the area. . . even the neighbors started complaining about funny looking roots all around the garden space. Even the Alcohol Tax and Tobacco agents dropped by to see if we might be trying to grow some "funny" weed.

In what I considered a brilliant move, I got out the riding tractor and with the mower, cut all the roots down even with the ground. We found later this had to be done at least every 5 to 7 days. To our amazement, we did notice that cutting off the roots had a dramatic effect on the bamboo shoots. As we pulled samples out of the ground, we noted that even though they were still slender, they seemed much more sturdy. We took a saw and cut one in half, and noticed the pulp inside had hardened... which was exactly what we wanted for sturdiness, yet still supple enough to sway slightly in the wind.

We still had the problem of getting the bamboo shoots growing larger in diameter. Leaving them in the ground longer like carrots or radishes had no effect on the roundness size, only the length. We also had another problem. We had no way of monitoring the growth of the bamboo shoots.

It was a Friday afternoon that Dan came driving up with a drilling rig. I thought he was going to drill a well, but I found out this unit was one like soil testing companies used for drilling for core samples. The drills could be extended 50 to 60 feet into the ground and made holes about 8 inches in diameter.

Dan went to our growing area and drilled about 25 holes, spaced about 10-feet apart. Over each hole, we put a plexiglass container, the open side covered with fine wire to hold the dirt and the bottom open in the center., We carefully planted more bamboo shoots, upside down in these containers, doused the dirt generously with "Mor-grow" fertilizer and anxiously waited.

By Monday, we were rewarded. The shoots were growing downward properly, and the roots were coming out of the end of the plastic container as we had hoped.

Several weeks passed, and everything was looking good. With the clear plastic, we could look through by shining a light and see the bamboo pole as it grew downward into the open hole.

Finally, we noticed the bamboo pole had banged bottom of the fifty-foot hole. Everything looked fine, except the pole still wasn't thick enough. It was only about 3-inches in diameter.

We took out one of the bamboo poles and ran tests with it. Dynamic and stress tests indicated that its diameter was not enough to withstand the weight of a tri-band beam in wind conditions of over 40 MPH.

By sheer accident while planting other bamboo poles (we were generally planting new crops every 3 or 4 days), we had broken off the end of one of the shoots, and again damaged the shoot a week later lowering it back into the hole. To our amazement, the damaged bamboo shoot was fatter in diameter than the others planted at the same time, and of course was shorter. So we decided to experiment and try to clip off the end of the bamboo shoots every 5 days and see what would happen.

Everything was going well, the new clipped "hybrid" shoots were expanding much larger in diameter than untouched shoots, but continued to grow in length. Finally, when the bamboo pole got about 10-feet long, Dan and I could no longer raise it out of the ground, hold it and trim off the shoot. We decided to leave it alone and let it grow the remaining 40-feet to the bottom of the hole. Our newly harvested "hybrid" bamboo pole was somewhat better in diameter, but tests told us we needed at least 6 or 7 inches in diameter

Continued on Page 42

Forsyth Graduates Novice Class

The Forsyth Amateur Radio Club has gotten back into the training business after several years of little such activity. Late this fall, the club started a Novice Class which finished in January.

Fourteen new Novices are the product, including five young people and two now-ham XYLs. The course was taught by club president Mark Anderson (WB2SMK). Chan Sawyer (W4JCB), Jerry Brownlee (WA4ZKI), Holli Nelson (KB4AKM), and George Woodard (NY4R) helped with various aspects of the course.

You are cordially invited to attend the umpteenth annual

Durham Hamfest

at

South Square Mall, Durham, North Carolina
Saturday, May 18th, 1985

8 A.M. until 4 P.M.
$4.00 at the door (still the same)
Free Tail Gating
Tables for Rent

the Friendly Repeater
WA4WTX/R
Talk In 147.825/.225

the Durham FM Association

West Virginia Notes

Continued From Page 32

ham is seeking a frequency pair for Barboursville -- near Huntington -- for a machine which will eventually be cross-banded to six and ten meters.

And we're trying to accommodate a group at Williamson which seeks to coordinate a pair for a machine in that community on the Kentucky boarder.

• • • •

Elsewhere in this issue you should find a listing of the repeaters which carry the "CVRA News Net" each Wednesday evening at 8:30. Wayne told me two West Virginia machines -- Bluefield and Mullens -- are carrying the net, which runs from 15 to 20-minutes. Any repeater which can pick up a signal from a machine carrying the net may repeat it over their facility. But let Wayne, K4MOB, know so your machine can be recognized on the air as among those carrying the weekly net.

• • • •

Garry Holt, N8BZS, of the Appalachian Repeater Association in Beckley, reports he is moving the N8FRV (449.80/444.80) repeater from the Beckley Emergency Operating Center back to Lick Knob, elevation 3250-feet.

The machine was moved to the Beckley EOC from its original Lick Knob site and equipped with an autopatch and linking capabilities with the Layland/Mann Mtn. 144.71/145.31 and Bolt Mtn. 144.57/145.17 two-meter repeaters. Since then the system has been re-arranged and the 440 repeater is getting little use. Garry says more hams may use it if it is returned to its mountain top site.

• • • •

In February the Putnam Amateur Radio Association began cooperating with the National Weather Service to organize a Weather Net to assist NWS in its public service training requirements. PARA was host at a special meeting Mar. 15 at the Putnam County Library to Richard Calcaterra, an NWS Warning Preparedness Specialist from the Parkersburg NWS office.

The net is cross banded to the club's 147.87/27 Scott Depot repeater from 3.865 Mhz. The Weather Net follows the Monday night West Virginia Phone Net on 3.865 Mhz (WVPN usually runs 6-7 p.m.)

It has been activated once, back in February, to collect information on power outages caused by a winter or snow storm. The net is taking a hiatus in April but will return in May with more on-air training.

Early session check-ins ran into the 20's, including a good representation of points within the state of HF, plus some out-of-state stations.

The Charleston area VEC group administered upgrading exams in the state capital complex on Mar. 2. They accommodated a number of walk-ins. A spokesman said the next test by the group in Charleston will probably be the first week in September. We may have more info for the August issue of the **Journal.**

• • • •

I hope most readers had an opportunity to hear the Mar. 29 North American Teleconference Radio Net on the subject of antennas and frequency coordination. The next NATRN broadcast will be on June 14 and will cover space communications, including OSCAR and other satellites.

John Ross Hamfest June 8-9

The John Ross Amateur Radio Club will hold it's annual Hamfest on June 8-9, 1985 at a new location, the Lakeview-Ft. Oglethrope High School in Ft. Oglethrope, Ga., which is located on Hwy. 2A, Exit #141, 4 miles off I-75.

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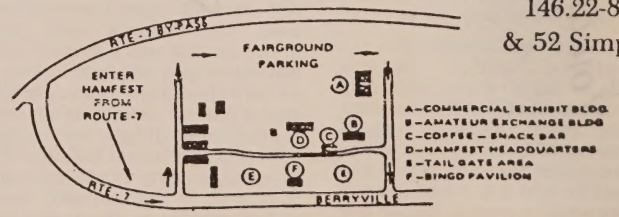

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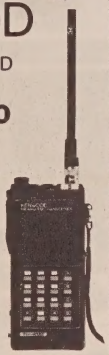

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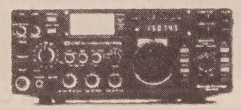

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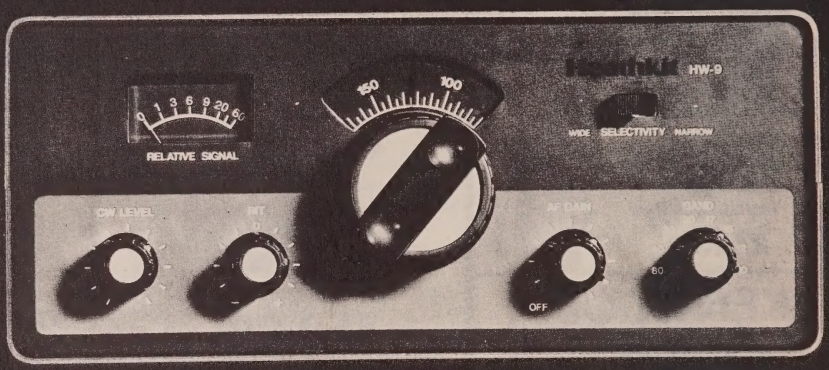

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The WORMS SQUIRM #2,

"Real Estate And The Ham"

—by Craig Wm. Vagell, WB2HJW

Last month I provided you with a basic outline of real estate considerations important to hams in site and location selection. Always keep in mind you should not be selfish, always consider the needs of your family in relocating. This month's article is devoted to THE MUNICIPALITYY.

After your County selection is completed you must decide in which municipality you will relocate. The most important issue regarding the municipal selection is its zoning ordinance regarding tower construction. Obtain a copy of it and read it with special attention to any references regarding towers or antennae of any kind. You may be pleasantly surprised to find the ordinance permits ham tower construction sufficiently adequate for radio transmissions (an attorney who is a ham rewrote an ordinance in a N.J. municipality to do just that!). You may be remiss to discover that no antenna installations are permitted of any kind outdoors! Most ordinances are not clear regarding tower restrictions and where they are interpreted within the ordinance.

Consider my own case where the ordinance permitted construction of accessory structures not to exceed a maximum height of 13 feet! The key is interpretation of what is considered an accessory use. Keep in mind, what is subject to interpretation by you can also be subject to different interpretation by the zoning board. In my case the tower was interpreted as an accessory use structure subject to 13′ height limitations. It is important for you to determine if you need a building permit to erect an antenna system. If you need a permit, you can be sure that the plans will be scrutinized to test compliance with the zoning ordinance. Compliance will consider height, safety, structural integrity and aesthetic appearance.

If you're sure you do not need a building permit, go ahead and put up your 150′ tower! If you're not sure, you have two theories to choose from:

1) PUT IT UP AND SHUT UP THEORY - Be aware that substantial fines are provided for in most ordinances if you are in violation. If you are not in violation, but failed to file for a permit, you may have to pay for the permit (but incur no fines) and you got your antenna up! If you are found in violation of the ordinance, you may be forced to take it down and apply for variance. Keep in mind by trying to "sneak it by" you may jeopardize your future credibility at a variance hearing.
2) OPEN THE LID THEORY - You can ask the building inspector if a permit is needed. The positive side of this theory is that you will not get into any hot water. The negative side is that you may be opening a can of worms by tipping him off that something IS going to go up! My suggestion is to ask without giving your name or property location if a permit would be required.

I started tower constructions to 10 feet and was promptly stopped with a legal stop work order. Since the tower remained under the 13′ height restriction when stopped, no fines were incurred. I was told to immediately secure a building permit for the 4 cubic foot concrete base and ten feet of tower, which I applied for the next day. The permit was denied on the basis that the plans showed proposed construction of tower height to 40 feet which was in excess of 13 feet limitation on accessory structures. I had two options, stay at 10 feet or apply for variance from height restriction. I started with the PUT IT UP SHUT UP THEORY and graduated to the OPEN THE LID THEORY! Boy the worms were squirming!!! In future articles I will detail preparation for variance hearings.

The ham should also consider whether the municipality has a RACES organization. Hams have a unique ability and service we can provide and it's important to avail yourself to the community in a viable communications network. Additionally, the municipality could provide local club activity to promote your social interaction with some of the local operators. Local clubs are a wealth of social enjoyment and information. You might hear some local horror stories which will give you insight into your antenna construction and station. Ask if other operators have had antenna approval problems, preferably before you move in! Take note, being involved in RACES cannot hurt your case should you require variance approval.

The reader should keep in mind I am not an attorney. I highly recommend you seek competent legal advice before doing anything. You will better understand my advice to seek legal advice in future installations of this article.

The importance of properly researching the municipality cannot be over-emphasized. It's the first place where you will encounter problems in the ham location decision! Next month the worms will squirm to analyze neighborhood factors and the ham location decision.

Winston-Salem Cap Squadron Members Complete Amateur Radio Class

Winston-Salem (NC) Civil Air Patrol Squadron members completed a Novice License class offered by the Forsyth Amateur Radio Club. Most have completed the FCC testing at this writing.

By adding an amateur radio license, these CAP members increase their emergency service capability. Not only are they able to use ham frequencies when CAP frequencies are not available or clogged, they can interface between CAP and ARES/RACES frequencies in actual emergencies involving both agencies. They also start out a life-long, interesting hobby.

Squadron members completing the course were Tom Harrell, KB4MZN (right), Jaime Burcham, KB4MZU (seated at right), Bobby Stitcher, KB4MZV (not pictured), and John Harrell (standing left).

Billion Dollar Idea-Didn't Work

Continued From Page 36

to really have a sturdy pole for antennas. What could we lower into the hole to cut off the bamboo sprouts on the end of the pole? Tree trimmers didn't work after 20-feet. So what do we do now. Dan and I were so close to success we weren't giving up now.

Dan had to go on a business trip to the Grand Turk Islands the following week so we decided to hold up further experimentation until he returned.

I'll never forget the day he returned from the trip. Under his arm he had a small cage. When he got to the door he held it up high for me to see and loudly proclaimed, "Here is the solution to our problem, Wayne!!!"

"What is it?", I asked quizzacally.

"It's a beaver!", he exclaimed, almost bursting with joy.

"What in heck is a beaver going to do for us," I shot back.

Dan, out of breath, explained that this particular beaver was a native of the Grand Turk Islands and thrived on eating bamboo shoots.

"Don't you see... we can lower the beaver into the hole and he will eat off the shoots for us!"

I still wasn't convinced enough to bet excited, so Dan took the beaver to the bamboo garden, removed him from the cage and tied a long rope to his tail and lowered him into the hole. With a light we could see how far to lower the beaver, and finally when he reached the end of the bamboo pole, he immediately grappled for the pole and snapped off the fresh garden sprout, and chewed it up.

"Let me try," I said finally joining into the excitement.

I grabbed the rope, pulled out the grumbling beaver and carried him over to another hole and started lowering him. In my haste, the rope slipped and the poor beaver started plunging down the hole. My life flashed before my eyes as I grappled for the rope, stopping the fall of the beaver just as he reached the end of a 35-foot bamboo pole. The beaver began frantically swashing back and forth with his wide tail and literally smashed the pole with his tail and frenzied teeth.

We continued to experiment with the beaver and found that a very slow descent was necessary. Apparently a fast lowering into the hole made the beaver's blood rush to his head and he momentarily, out of fear of a closed hole and blurry vision, proceeded to go beserk for a moment. We certainly didn't need a berserk beaver ruining out bamboo poles, so we learned to lower him carefully.

After a couple of months, we harvested our first 8-inch thick, 50-foot tall bamboo pole. It looked great!! We decided to pull up several more and plant them all in my antenna field. By early afternoon Dan and I, feeling very good, planted the 6th and final pole for the antenna tests. Tomorrow would be the day!!

Dan went home, and I went in feeling very successful. We had succeeded in developing a "hybrid" antenna tower capable of holding HF beams, two meter beams and rotor. The fabulous thing about them, they were very cheap to make, and weighed only 25 pounds. Dollar signs began to appear before my eyes as I drifted off to sleep.

The next morning I must have overslept because the sun was high in the sky, and the temperatures had gotten quite warm already. I pulled on my work clothes and headed for the bamboo pole antenna farm, still thrilled at what we had done.

I rounded the corner of the storage building and gazed across the antenna field. My heart skipped a beat, sweat beads broke out across my brow, my eyes bugged and I sank to my knees. I couldn't believe what I saw.

Those durn bamboo poles had turned around and grown back into the ground, upside down in their natural lifelong environment!

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Just as April showers bring May flowers, so have the winter snows brought forth new repeaters. We have new repeaters and/or frequency changes from Union City t Chattanooga. Here are the ones that are already on the air. (There are many more in the works.):

• • • •

In Union City, WA4YGM has moved to his new frequency of 147.615/015. We are hoping that this will give Upper West Tennessee better communications with less interference.

• • • •

Near Clarksville, the small town of Cumberland City has a new repeater on 144.73/145.33. Lance Morris, N4GMT said that he has had the usual start up problems but it is running smoothly now.

• • • •

In that same area, Wayne KA4NNE has recoordinated his Guthrie, Ky. machine to 146.205/.805.

TENNESSEE TID BITS

by J. Tom Park, WD4KWP

The Donelson area of Nashville now has the WA4BZU low profile machine on 147.855/.255 to give coverage to Percy Priest Lake.

• • • •

Nashville also has a new 6 meter remote base on 52.525. It is tied to N4ARK's 145.47 machine.

• • • •

Billy Martin, NW4E and the Tenn. Emergency Amateur Radio Net have their 144.85/145.45 machine on in Springhill near Columbia.

• • • •

In Lower East Tenn., there is a small town that has the dubious distinction of being in a valley with a nuclear power plant at each end. Pikevilel Civil Defense and Bill MacPherson K4MJM got together to provide extra communications in the event of trouble.

I would like to thank Bill for the many hours of "homework" he did on coordination. With Pikeville being so close to several states, the paperwork got very deep at times. (It took three sets of requests to finally coordinate this repeater.)

• • • •

Last but not least, Charlie Curle AD4F has a new machine atop Signal Mountain (Chattanooga). It's on 146.055/146.655.

• • • •

As you can tell, most of the new repeaters are away from the main population centers. This is good because many of the less populated areas have had little or no VHF or UHF communications.

If you are considering starting a repeater project (no matter what size town), please talk to your group about 220 & 440. There is plenty of room on both these band.

REPEATER JOURNAL ADVERTISING RATES

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The Repeater Journal is a 3 column magazine with overall page dimension of 8½ x 11 inches. Our page size enables a wide variety of ad sizes from full page down to one column inch size.

Column Widths are 1 col: 2-1/4-in., 1-1/2 col: 3-1/2-in., 2 col: 4-5/8-in., 3 col: 7-1/8-in. Ad widths will be based only with the specified column widths.

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Roanoke Division LPM Scheduled May 11-12

The 1985 ARRL Roanoke Division League Planning meeting will be held May 11-12 at the Ramada Inn South, Apex, N. C. (just South of Raleigh). The meeting is sponsored by the Raleigh and Cary Radio Clubs. Talk-in will be on 04-64 and 75-15.

What Does The Future Hold for Amateur Radio

Amateurs attending the LPM will have an opportunity to learn about and contribute to this question. Among ARRL personnel present will be Gay Milius, W4UG, Director; and John Kanode, N4MM, Vice-Director for the Roanoke Division. Others present will be representatives from Headquarters, the four Section Managers, and Section Emergency Coordinators of the Roanoke Division. Some Field Appointees will also be present.

The purpose of a LPM is to enable league members and other amateurs attending a chance to learn, and voice their opinion as to future plans of Amateur radio. The Director will take this information by to the league for possible implementation.

The meeting will start at 1 p.m. Saturday. At 7:30 p.m. there will be an informal dinner. Meetings will resume at 9 a.m. Sunday and finish at 12 noon.

BRATS Hamfest July 28

The Baltimore Radio Amateur Television Society (BRATS) again presents its famous BRATS Maryland Hamfest and Computerfest, on Sunday, July 28th, 1985, at the Howard County Fairgrounds, Route 144 at Route 32, adjacent to Interstate 70 in West Friendship, Maryland.

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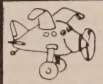

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2nd Prize - 2M SANTEC — *Williams*
3rd Prize - 2M ISOPOLE — *Williams*

Sunday Prizes

1st Prize - CORSAIR & PS — *F&M*
2nd Prize - A4 - CUSHCRAFT — *Britt*
3rd Prize - 220 SANTEC — *Williams*

Dealers Can Set Up Friday Afternoon, July 26, 1985

Outdoor Flea Market
Food on Premises
RV Parking (No Hookups)

Talk-In: 31/91 or 16/76 or 52

ADMISSION $4.00
Pre-Registration $3.50
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Dealer Tables $5.00
Flea Market Sites $2.00

Make Checks payable to:
WCARS, P.O. Box 1488
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WALK-IN
WCARS/VEC EXAMS
ALL CLASSES

Bring Copy of Present License
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$4.00 Check Payable to:
WCARS/VEC

Pre-register to:
Garland Lance NC4N
854 Sand Hill Rd.
Asheville, NC 28806

For Hamfest Advance Tickets:
Marvin Solomon KI4EA
14 Carjen Avenue
Asheville, NC 28804

For Information & Table Reservations
Earl Elliott KI4UO
17 Emory Road
Asheville, NC 28806

Looking back

—by David Ward, KA4LVO

May 1975

The Repeater Journal

My first reaction upon looking back to the May 1985 issue of the Repeater Journal was one of surprise, as this issue contained 52 pages of stories and data. The previous issue was only 20 pages! However, the reason for the increased size was soon clear; this was the yearly 'Directory and Data Book'. This issue contained a description of each of the 63 member repeaters in the CVRA, including repeater coverage area, equipment description, individuals and clubs affiliated with the repeater, frequency, and hours of operation. One page was the repeater index by frequency, three pages were used for the 3-state repeater index, and one page even included a listing of Florida 2-mtr repeaters supplied to us by the Florida Repeater Council. Additional pages were needed to print the club meeting calendars, the current bandplans, a net register and the names and addresses of CVRA officers, directors and chairmen.

Because of the nature of this issue, several articles were printed stressing the idea of a 'home repeater' and the importance of financially supporting your home repeater. A definition of a home repeater was given as the repeater that you monitor most frequently. (Incidentally, the home repeater concept had been unanimously adopted at one of the earliest meetings forming the CVRA.)

Since this issue featured the 'repeater', a story appeared entitled "What is a Repeater". The necessary elements of a repeater, such as carrier operated relays, COR timer, the antenna, transmitter and receiver were graphically shown to complement the simple written explanation of a repeater.

Accompanying the bandplans was a story explaining the role of the CVRA in regards to the repeater sponsor. A plea for understanding and co-operation was issued to the repeater owners and potential repeater owners. "It must be understood and appreciated that the Carolina-Virginia Repeater Association does not 'assign' or 'give' repeater frequencies to anyone. No one can give or assign a frequency in the amateur bands to anyone; for any amateur, within the limit of his license, may use any frequency for any legal purpose, on a non-interfering basis as long as he remains. . . within Part 97 of the Regs. As a result, the Association has no enforcement powers, and can only recommend frequencies. The only penalties for neglecting to advise the CVRA of your present operation, or for neglecting to obtain or disregarding recommendations for your future operation, is the possible interference from other groups which may reduce the effectiveness and enjoyment of your system, and of your neighbors. . . The best, and most effective way to insure cooperation is for all operators and users to continually 'talk-up' the Association. . . The Association will be effective only when everyone respects the actions and recommendations that it makes."

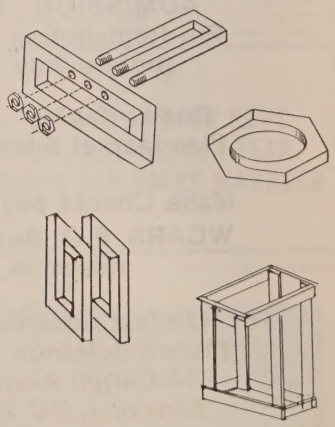
Among the recommendations made elsewhere in this issue was a list of do's and don'ts for repeater use. I feel it appropriate to list them again 10 years later for those who might have forgotten them and for those who have since become repeater users.

DO
- —Keep all transmissions short
- —Think before you transmit
- —Pause a couple of seconds between exchanges
- —Identify properly
- —Be courteous
- —Use simplex whenever possible
- —Use the minimum power necessary
- —Support your local repeater club.

DON'T
- —Abuse autopatch privileges
- —Break into a contact (unless you have something to add)
- —Forget that Amateur radio is allocated frequencies because it's a service
- —Try to prove what a great operator you are
- —Monopolize a repeater
- —Forget that what you say over a repeater can be heard over thousands of square miles.

Among the stories from the 73 Hotline were the following. Should amateurs practice self-policing of the frequencies or leave it to the FCC? A good number of hams felt that the FCC should become more involved, as criticisms of the Official Observers were numerous. The opinion of the author was the less the FCC was involved, the better. (One method of self-policing is co-operation among individuals involved in repeater co-ordination problems.) 'An Experiment in Cooperation' dealt with the success rate of a new program (called 'crime spotters') using hams in the Los Angeles area. Finally, there was a story on 'When Not to Obey Rules'. An ingenious method of recovering a stolen rig was used by a group of hams on a New Hampshire repeater. The CB'er got to chatting with the fellows, inquiring as to their handles. "Rather than telling the bewildered chap to get off the repeater, (they) quickly shifted to handles and got to work finding out where the CB'er was, then talking him into coming together with them for coffee. . . It went fairly smooth except when one dense individual got on and insisted on using calls (until they got him on the telephone and clued him in)."

Finally, there were these untitled drawings on page 31. Leads one to wonder whether they might have come from the technical committee (who didn't wish it to be known).



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FRG-7700 Receiver
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Greensboro, North Carolina 27407
(919) 299-3437

Hams Defeat Antenna Ordinance

Continued From Page 15

not only the citizens of Cumberland County but the rest of the State and the nation as well.

Recommend that the Commission decline to act on same and let the records so read by indicating that the proposed ordinance amendment has been noted and filed.

End of presentation eloquently delivered by Burt A. (Van) Vander Clute N4ERM. (Major, US Army, School of International Studies, Fort Bragg, N.C., Spokesperson for CFARS.)

The next speaker, Mrs. Rae Harris (XYL of WB4TRW) spoke in opposition of the amendment for the TV Satellite Dish sales agency operated by her husband. She asked those in attendance to think of "America" and "Freedom" and reiterated that the amendment would infringe on American freedoms. Harris said that TV Dish antennas were no more unsightly than patio umbrellas, dog houses, water towers or basketball hoops. "The location is vital to reception," she said. "They can't be erected to please the neighbors."

One county commissioner, Virginia Thompson, was alone in her voice to support the amendment, in a 4 to 1 vote. This is another classic example of how many state and local lawmakers try to ease into passage, laws that affect the lives of many varying from good to no-good. This is a case where democracy prevailed, but only because of the dogmatic and persistent combined efforts, of a group of alert concerned citizens, who relied on mostly Amateur Radio operators and their ingenuity and expertise. They, as our forefathers, cared enough to become personally involved and stand-up in front of the lawmakers and be heard.

Local T.V. and newspaper coverage was outstanding. They were very generous and supportive of the victorious (underdog) Hams and concerned citizens of Cumberland County. Hopefully, this example will send a clear message to other community Hams and other concerned citizens in our great nation to keep a sharp vigil on their rights and the fine print, to unite swiftly when the need arises and to use every ethical means to combat unjust and unnecessary legislation. "For Radio Free America," we wish to thank the many local hams and other concerned citizens for their combined support.

Richmond, Va. Exams

The Richmond ARC volunteer examining team has scheduled FCC examinations for the following dates: Saturday, May 25th, July 20th and Sept. 28th. The examinations will be given at the J. Sargeant Reynolds Community College, 1651 E. Parham Road, Richmond, VA., at 10:00 a.m. Cut off date is 30 days before examination date, although a limited number of walk-ins will be taken.

Applicants should send a completed Form 610 along with a copy of their present license, if he has one, also a check made out to ARRL/VEC for $4.00. Send all of this to E. Mac Crush, WB4UOI, 9302 Ledbury Road, Richmond, VA. 23229.

REPEATER-CLUB-NET SERVICE PAGE

"SUPER 13"
Pt. Lookout Mt., Va.

You Are Welcome To
Join Us Anytime!

N4VL Repeater 144.53 - 145.13

CLUBS, REPEATER OWNERS,
NET MANAGERS
PROMOTE YOUR ACTIVITIES
ON THIS PAGE. – 4-Issues
$14.00 A YEAR PREPAID
WRITE OUR SALES MANAGER
(1-Year-$14.00 Minimum Contract)

DIAL BR549
(BLUEFIELD REPEATER 145.49)
Bluefield Hamfest
Computer and Satellite TV Fair
AUGUST 25, 1985

444.650 — Richmond
444.850 — Petersburg
147.39 — Petersburg
The KI4RO Repeaters
Covering Central And Southside VA.
*****
Richmond KI4RO-KI4OJE-N4EHJ
Petersburg KI4RO

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The CVRA NEWS NET
WEDNESDAY NIGHTS
8:30
JOIN US FOR NEWS!!
(Spon. by CVRA-SERA & in conjunction with the Piedmont Coastal Repeater Network)

Serving Eastern North Carolina
From the Capital
To The Coast
145.35 147.09
Repeaters
Greenville, N.C.

Serving The Entire
Outer Banks of
North Carolina
KE4PB/Repeater
146.235 – 146.835
Nags Head/Bodie Island

The Amateur News And Information NET
Mondays - - - - - - 9 PM
34-94
Richmond
KI4OJE N4EXQ N4EPO
Club, ARRL, ARES, DX, FCC Information

CVRA-SERA
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OCTOBER 19, 1985
Appalachian Fairgrounds
GRAY, TN.

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Richmond, Va.
The N4HB Repeaters
Covering Central Virginia
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N4HB - WA4VXR - WB4BVY - WA4SSG

RATS
The Richmond Amateur Telecommunications Society, Inc.
Repeater 28-88
Proud Sponsors of
The Richmond Frostfest
N.A. Teleconference Net
Emergency Speed Dial
Police-Fire-Emergency

KNOXVILLE HAMFEST XIX & COMPUTERFAIR

DATE: May 25th and 26th, 1985

LOCATION: KERBELA TEMPLE BUILDING
315 MIMOSA AVENUE
KNOXVILLE, TENNESSEE

HOURS: 9 to 5 Saturday, 10 to 4 Sunday

PRIZES: YAESU FT-757 HF XCVR
ATARI 800XL & INDUS DISK DRIVE
OTHER PRIZES THROUGHOUT THE EVENT

FCC EXAMS: Both Days! Send a copy of your license, a Form 610, a check for $4.00 made payable to WCARS/VEC, and a properly filled out SASE to Ray Adams, N4BAQ to insure prior registration for the examination.

SPECIAL EVENTS: For the Ladies... Craft Demos, Free Make-overs, Forums. Ham and Computer Forums

DEALER INFO: Indoor Spaces - Price of tickets + $7.00/day
or $12.00 for both days
Outdoor Spaces - Price of tickets + $3.00/space/day

ADMISSION: $3.00 per ticket, good for both days

ADVANCE TICKETS: Available from: Bob Johnston, N4AIA (615) 984-4786 Eve.
Route 1, Channel Drive (615) 970-3458 Days
Louisville, TN 37777

DEALER CONTACT: Rich Slover, ND4F (615) 525-5923 Evenings
2700 Waverly Street, #4 (615) 584-5872 Days
Knoxville, TN 37921

TALK-IN: W4BBB Repeater, 147.90/30 and 222.90/224.50 MHz.

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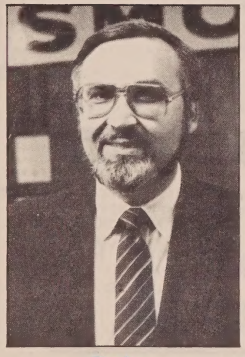

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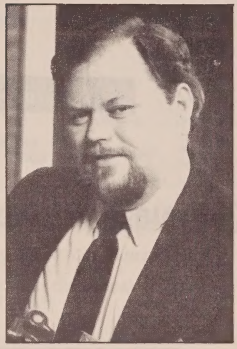
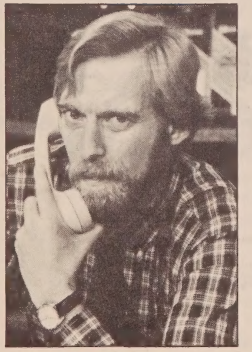
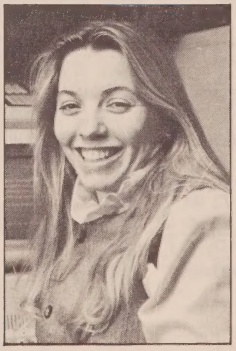


Ken
N4FYO



Morgan
KB4GFJ



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ECHO	DSDD	22.80/10
ECHO	SSDD	04.59/02
ECHO	DSDD	05.49/02

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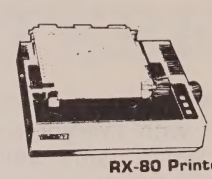

RX-80 Printer

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TRANSTAR 120	DAISYWHEEL	$424.99
TRANSTAR 130	DAISYWHEEL	569.99
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TRANSTAR 315	COLOR DOT/ MATRIX	454.99
EPSON RX-80	DOT/MATRIX	274.99
EPSON RX-100	DOT/MATRIX	499.99
EPSON FX-80	DOT/MATRIX	469.99
EPSON FX-100	DOT/MATRIX	599.99

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5 1/4" Dual (2) Floppy Disk Drives

DOUBLE SIDED DOUBLE DENSITY

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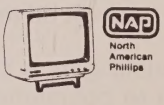
HITACHI	229.95	169.95	325



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COMPOSITE INPUT WITH SOUND
80X25-2000 CHR

20 MHZ. BANDWITH	LIST	SPEC.
GREEN SCREEN BM7552	$149	$115
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FOR IBM PC		
GREEN SCREEN BM7513	189	125
AMBER SCREEN BM7523	199	135

COMPUTER PRINTER RIBBONS

R I B B O N S		Single	Dozen
IBM	SELECTRIC II HIYIELD	#320	$2.00	$18.00
"	" III "	327	4.00	45.00
OKIDATA	MICROLINE 80/82/83/92/93	470	2.40	25.00
"	" 84/94	471	4.50	45.00
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LEADING EDGE	STARWRITER 2/F10 NYLON:	153:	4.50	51.00
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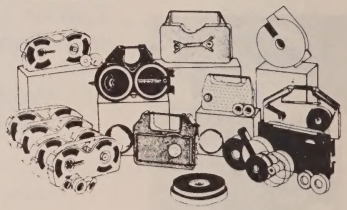
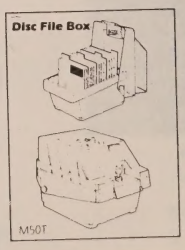
C.ITOH	A-10-20/F-10-20/F-10-50	153:	4.50	51.00
" "	" " "	158'	3.50	41.00
" "	8500/8500B/1550/1550B/8023A	114	5.50	64.00
EPSON	MX 70/80/82	165	4.00	45.00
"	" 100	167	8.00	88.00
"	HX 20	164	2.00	18.00
COMMODORE	4022/8022	165	4.50	45.00
"	3022	470	2.40	27.00
"	8023P	113	5.90	69.00
"	8024	231	5.25	60.00
"	8026B/8028	220	2.50	28.00
"	" "	222	2.50	28.00
APPLE	DOT MATRIX	114	4.75	55.00
"	DAISY WHEEL LPQ	219	4.25	49.00
"	CENTRONICS 700 SERIES	111	3.50	40.00
ATARI	820	111	3.50	40.00
COLECO	ADAM LETTER QUALITY	120	7.15	80.00
JUKI		320	2.00	18.00
GEMINI 10		470	2.40	25.00





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Coming Events

1985 HAMFEST CALENDAR

Note: Dates marked with an asterisk are NOT confirmed dates. They are based on last year's show dates. Clubs and groups sponsoring hamfests are urged to contact the Journal Editor for confirmation of their show dates.

Deadline for August issue is July 1.

MAY

4-5 ..... Hamfest, GREENVILLE, SC
4-5 ..... Hamfest, ALBANY, GA
11-12 ..... Roa. Div. League Plan Meet, RALEIGH, NC
12 ..... Hamfest, BRIDGEWATER, PA
18 ..... Hamfest, DURHAM, NC
18-19 ..... Ala. State ARRL Conv., BIRMINGHAM, ALA
18-19 ..... Hamfest, LAKE HARTWELL, GA
25-26 ..... Hamfest, KNOXVILLE, TN
26 ..... RVARC Hamfest, ROANOKE, TN

JUNE

2 ..... Hamfest, HUMBOLT, TN
2 ..... Hamfest, MANASSAS, VA
8-9 ..... John Ross Hamfest, FT. OGLETHROPE, GA
9 ..... Hamfest, MUNCIE, IND

JULY

6-7 ..... Georgia State ARRL Conv., ATLANTA, GA
6-7 ..... WV Radio Council Fest, JACKSONS MILL, WV
13-14 ..... Hamfest, CHARLESTON, SC
20 ..... Swapfest, CARY, NC
21 ..... TSRAC Hamfest, WHEELING, WV
27-28 ..... WCARS Hamfest, ASHEVILLE, NC
28 ..... BRATS Hamfest, W. FRIENDSHIP, MD

AUGUST

3-4 ..... Hamfest, JACKSONVILLE, FL
4 ..... Winchester Hamfest, BERRYVILLE, VA
11 ..... Hamfest, S. CHARLESTON, WV
11 ..... Hamfest, LEXINGTON, KY
17-18 ..... Hamfest, HUNTSVILLE, ALA
31 Aug.-1 Sept. ..... Hamfest, SHELBY, NC

SEPTEMBER

6-8 ..... Florida State ARRL Conv., MELBOURNE, FL
7-8* ..... Swapfest/Picnic, CLEVELAND, TN
8* ..... Hamfest, GAITHERSBURG, MD
14* ..... WCARS II Swapfest, GREENWOOD, SC
14-15 ..... Hamfest, MOBILE, AL
15* ..... Hamfest, AUGUSTA, GA
21-22 ..... Hamfest, VIRGINIA BEACH, VA
22* ..... Hamfest, GAINESVILLE, GA
22* ..... Hamfest, CINCINATTI, OH
28-29 ..... ARRL Nat'l Conv., LOUISVILLE, KY
29* ..... Hamfest, LAKE LANIER, GA

OCTOBER

4-6 ..... ARRL Nat'l Conv., LOUISVILLE, KY
6* ..... Hamfest, ROCK HILL, SC
6* ..... Hamfest, ROME, GA
12-13 ..... Central Ga. ARC Hamfest, WARNER ROBBIS, GA
12-13* ..... Hamfest, CLEARWATER, FL
12-13* ..... Hamfest, MEMPHIS, TN
13* ..... Hamfest, MAYESVILLE, NC
19 ..... Tri Cities HAMFEST, GRAY, TN
26-27 ..... Delta Div ARRL Conv., CHATTANOOGA, TN

NOVEMBER

2-3* ..... Hamfest, STONE MT., GA
3 ..... Hamfest, CONCORD, NC
30-Dec. 1 ..... Hamfest, GREENSBORO, NC

CVRA - SouthEastern Repeater Association, Inc.

FINANCIAL REPORT AS OF MARCH 31, 1985 AND 1984

	1985	1984
REVENUES		
Advertising	$2,538.75	$2,526.50
Associate Membership dues	3,235.88	2,231.00
Full Membership dues	2,249.50	1,002.00
Decals	52.50	
Postage	3.00	
Other	5.00	22.75
	$8,084.63	$5,782.25
EXPENSES		
Journal mailing	$ 473.95	$ 673.25
Journal printing	4,018.81	3,144.28
Directors meetings	768.68	534.19
Office expenses	142.96	8.67
Postage - other than journal	83.35	33.81
Printing - other than journal	813.27	62.80
Telephone	142.91	105.41
Other	-0-	2.35
	$6,443.93	$4,564.76
EXCESS OF REVENUES OVER EXPENSES	$1,640.70	$1,217.49
Balances at beginning of year		
Expenses advanced	$ 900.00	800.00
Invested in copy machine	1,344.00	1,792.00
Cash in bank	1,413.04	2,507.39
	$3,657.04	5,099.39
EQUITY TO ACCOUNT FOR	$5,297.74	$6,316.88
Less: Expenses advanced	$ 900.00	$ 800.00
Invested in copy machine	1,344.00	1,792.00
	$2,244.00	$2,592.00
CASH IN BANK	$3,053.74	$3,724.88

Respectfully submitted,

Ray Adams

Ray Adams, N4BAQ
Treasurer

COLECO
CASSETTE TAPE RECORDER
COLECO
CASSETTE TAPE RECORDER
Dealer Inquiries invited - Include SASE!
• Auto Stop
• Built-in Condenser Microphone
• Automatic Level Control
• Operates on 4 "C" Cells or AC Adapter (optional)
• Adaptable to Atari 2600 and Colecovision Exp.Module I
$19.00 each
Includes shipping via UPS to your QTH/
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1609 SO. ISEMINGER ST.
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NO VISA or other Credit Cards.

New NC Ham Watch Tags Being Delivered

Surprise! They looked better than we thought. The first batch of the North Carolina "Ham Watch" license tags were delivered by Reed Whitten at the Charlotte Hamfest in March. The tags, made at the same place as regular automobile tags in North Carolina are of the same sturdy metal, and coated with long lasting paint. They white background has blue and black lettering. Also included was a large decal to place in your back window.

CLASSIFED ADS

Two Motorola MH-10 Portables. Excellent condition with new nicad batteries. 40 to 50 mhz. Currently on 42.96 mhz, with DPL. Universal with hand mike. $500.00 each. WEST ANTENNA SERVICE, 1-800-632-0389 in NC or 1-800-334-4252 outside NC.

IFR Model 1000A Service Monitor. Factory reconditioned. $5,500. WEST ANTENNA SERVICE. Call toll free, in NC 1-800-632-0389 or outside state 1-800-334-4252.

Bearcat Model 300 50-channel programmable scanner. New. Full Warranty. $375.00. Complete with mobile mounting brackets, 12-volt power cord, 120V AC power cord, and has automatic recording hookup for tape recorder. WEST ANTENNA SERVICE. Call 1-800-632-0389 in NC, or 1-800-334-4252 outside NC.

The New "Ham Watch" Tags for NC Hams

HAM WATCH vehicle identification tags, with your call sign, are available to North Carolina HAM WATCH participants.

Orders for tags should be placed by completing a form and submitting it along with a check payable to "North Carolina AREA" to your local Emergency Coordinator. Orders placed through your EC will be given the highest priority. If you do not have an EC, or cannot contact him, you might want to fill out the form below and mail with your check to: REED WHITTEN, AB4W, North Carolina Section Emergency Coordinator, 1208 Oxford Place, Cary, N.C. 27511. Please allow several weeks for delivery.

These tags may be run on the front of your vehicle and **do not** replace your regular automobile registration tags.

Sample License Application

I am a licensed radio amateur and want to demonstrate my participation in the HAM WATCH Program by displaying a HAM WATCH vehicle identification tag on the front bumper of my vehicle. I am familiar with the guidelines and principles of the North Carolina HAM WATCH Program and agree to make available my amateur radio communication capabilities.

Call Sign _____ No of HAM WATCH tags _____

Name _____ Cost per tag $4.00

Address _____ Total $ _____

City _____, NC (Zip) _____

Home Phone _____ Business Phone _____

County _____ EC's Call _____

Estimated miles driven in North Carolina per week _____

Signature _____

WHERE TO BUY DIRECTORY

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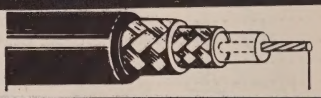

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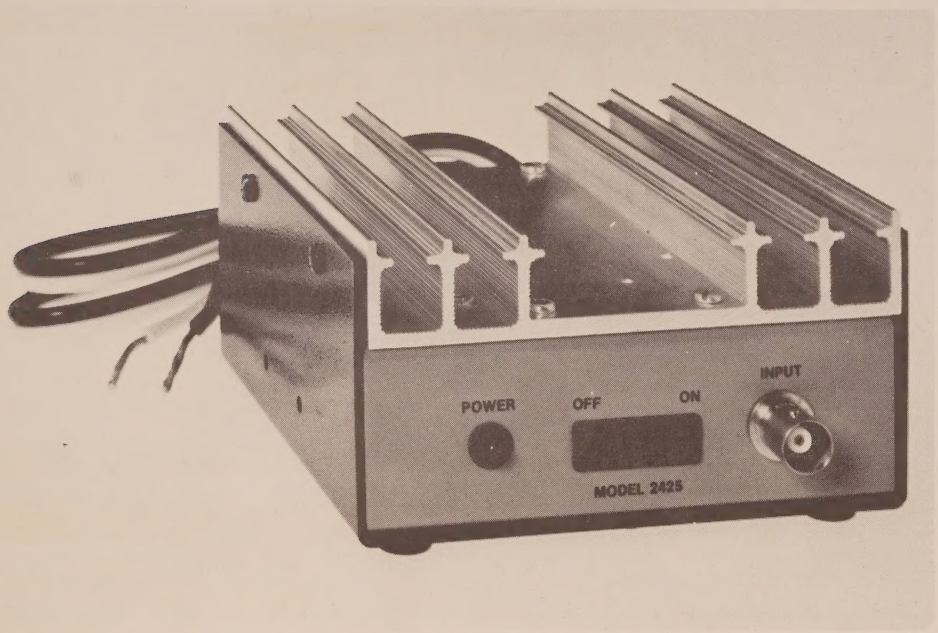

SPECIFICATIONS

FREQUENCY RANGE: 144 to 148 MHz

MODE: FM

INPUT POWER: 1 to 3 WATTS

OUTPUT POWER: 25 to 30 WATTS @ 2.5 WATTS INPUT

HARMONIC OUTPUT: MORE THAN 60 dB BELOW CARRIER

DC POWER: 13.8 VDC (NEGATIVE GROUND) @ 5 AMPERES

IMPEDANCE: 50 OHMS INPUT AND OUTPUT, UNBALANCED

FUSE: 7 AMPERES

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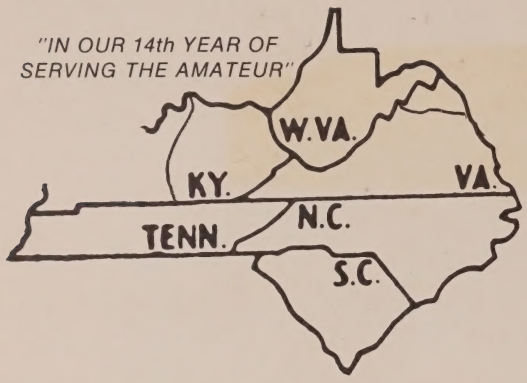

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